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How's THE GRIP your way?

PERHAPS one mistake in the honey leaflets is printing the price on them so customers can see how little they cost.

EIGHT FOUL-BROOD inspectors in Colorado inspected 4885 colonies; found 233 diseased, and destroyed 31.—*Amer. Bee Journal*.

I MIGHT SELL friend Atherton (p. 96) some wide frames cheap, but he's never done me any harm, and I wouldn't advise him to take them.

PROF. COOK argues in favor of the belief that all honey dew is of insect origin, but I think I've read just as strong arguments on the other side in foreign journals.

FRUIT BLOSSOMS covered with netting to keep out the bees remained one to seven days longer than those uncovered; apparently waiting to be fertilized.—*Bienen-Valer*.

I DON'T KNOW enough to know whether Adrian Getaz' logic is all sound. p. 89, but I do know that if I could have all colonies strong the last of April I'd risk the useless consuming they'd do.

H. S. PRICE says in *American Bee Journal*, that from a fruit-farm he got only \$16 instead of \$1600 because too rainy for bees to fertilize the blossoms. Others without bees got nothing [See Pickings.—Ed.]

IT IS PLEASANT to know that *Deutsche Illustrierte Bienenzeitung*, formerly so ably conducted by the lamented Gravenhorst, is to continue under the editorship of his son Hugo, assisted by his sister Franciska.

AN EIGHT-FRAME HIVE is not as safe as a ten-frame for one who pays little attention to his bees; but it's *big enough* for any one who is allowed to use two stories. I'm sure a ten-frame is sometimes too small for me.

IN REPLY to friend Pettit, p. 95, I may say that I've always had separators $\frac{1}{4}$ inch below tops of sections, and used insets manufacturers happened to make, and have not been troubled with bees building in the space thus made.

THE FOUL BROOD LAW of Colorado is somewhat radical. If I understand it, as given in *American Bee Journal*, when a man has foul brood, and 20 of his neighbors know of it, himself and his 20 neighbors will each be liable to a fine of \$5 and costs.

"PICKINGS," the new department in GLEANINGS, is a child of promise. I don't dare to say otherwise. "Stenog" is the man who untangles my punctuation, and keeps an eye on my English; and if I vex him he might print my stuff just as I send it.

HERR SCHROEDER, in *Centralblatt*, says mead can be made free of alcohol. If a wholesome, popular drink could be prepared from honey, it would make quite an outlet. Now will some of our good German friends tell us just *how* it is made?—wenn es Ihnen gefaellig ist.

A CHEEKY CHAP is Pres. Aikin, of Colorado. At their convention he talked about the State association being second not even to the National. Well, I don't blame him. What other State association has 154 members? Pres. Aikin and Sec'y Rauchfus are both hustlers and fine fellows.

DR. MASON says, in *Amer. Bee Journal*, that his bees breed in cellar—believes they're stronger now than in November. Critic Taylor says he can't be depended on to lay later than Sept. 10, and they average only $5\frac{1}{2}$ months in the year. Can't these two brethren make some kind of compromise? How would it do for them to swap queens?

ACCORDING to the first edition of the Standard dictionary, the honey contained in a section box may be called a section. A number pitched into me insisting that it was not so used outside of Marengo, and I asked the publishers to expunge that definition. Now comes S. T. Pettit, p. 95, and says it's right. I might have let the definition stand, adding in brackets, "Local; Belmont, Marengo."

THAT GUESS of the editor, p. 77, that "in the majority of cases it is chunks of propolis" that blacken combs will hardly do. Don't queenless bees deal in propolis? J. E. Crane says, p. 44, that brood-combs in a queenless colony were pure white after four months. That could be better explained on the theory in one of the foreign journals (I forget which),

that the dark color is caused by the first dejections of the young bees, which are of such intense yellow as to appear black.

HONEY-BATHS, according to *Bienen-Vater*, are very much in fashion in Paris to give fullness to ladies beginning to fade. [I do not take much stock in offering a good thing on the outside. Good nutrition and an unclogged condition of the alimentary canal will do more to take out the fade than any thing else; and more to keep off grip than all the medicines that were ever concocted. Don't you think so, doctor?—ED.]

ACCORDING to some interesting figures given by G. M. Doolittle, in *Amer. Bee-keeper*, honey brings 35 per cent as much to-day as it did 25 years ago, while supply-dealers get only 20 per cent as much for sections; this, too, with the extra burden of now making two sections for 2 pounds of honey instead of the former one section. Evidently supply-manufacturers have done their share toward meeting low prices. [See Pickings.—ED.]

THE TROUBLE about raising money for the Langstroth monument is the false pride that prevents a man contributing unless he can give a large sum. French bee-keepers are giving 10 cts. and upward for a monument to de Layens, and have reached nearly \$300. [That is the way, of course, to raise the monument fund. While we have a few small subscriptions for the Langstroth monument, some of them are as large as \$25.00.—ED.]

IF L. STACHELHAUSEN is correct, as I think he is, as to the effect of baits in supers, p. 85, then they form quite a factor in prevention of swarming. Forcing bees to begin on raw foundation in super by the crowded condition of the brood-nest is forcing them just so much toward swarming. [This is a good point. It is one of the golden nuggets that appear in the ordinary articles of some of our contributors, but which the editor had not seen. I now desire to give it all the prominence I can, as I believe there is a good deal in it.—ED.]

HASTY is incorrigible. The idea of his talking the way he does on page 81, when a faithful friend tries to mend his manners! The worst thing is the evil of his bad example. The editor had begun trying to reform, and now with Hasty's vicious lead there's no telling where he'll go. [Hasty is all right; but I suppose I shall have to take middle ground now. At least nine-tenths of the A B C book, last edition, has adopted the neuter pronoun, and it is too much of a job now to change back, hunting out all the *its* and making them *he* again. As it is, I have a mortal fear that in some places it may read *it* and *she* both. Indeed, I know it does on two or three pages, greatly to my mortification; so if you see the inconsistencies, do not say anything about it until I get a chance to rectify them.—ED.]

ONE REASON I want cleats on hives to go clear across is to strengthen the weak place left by the rabbet. Another is that I want to be able to take hold at any part, and sometimes two of us want to carry one hive. [Running a cleat clear across the front and rear of the *regular Dovetailed hive* with its

cleated cover would not strengthen the weak place left by the rabbet, for the reason that the cover cleats drop down $\frac{1}{2}$ inch, nearly, and consequently the lifting cleat would have to drop down $\frac{3}{8}$ inch, and that would bring the top edge at a point just about on a level with the bottom of the rabbet. On the other hand, doctor, your hive-covers are cleated in such a way that there are no downward projections. This allows cleats to come clear up flush with the top edge of the hive. I can not see what other advantage there is in having cleats reach clear across the hive-front unless it is where two persons carry hives with the rope lift, such as you use. Isn't it true that the average bee-keeper uses a wheelbarrow? Hives with Hoffman or self-spacing frames don't require to be handled like eggs.—ED.]

I TRIED on a large scale that plan of preventing increase, p. 90, by including the queen with an *excluder* so as to let the young queens fight it out. I could stand the sulking if that was all. They would swarm so repeatedly, and get so desperate about it, that nearly all the bees from five or six strong colonies would hang in a single bunch, sometimes nearly all day, and only too often a queen would get out, and then there would be trouble. The queens were not small either. [Since you speak of it, I now recall that, when I tried the same plan, the bees became desperate. They not only sulked, but kept swarming out every day or two. So far as their usefulness for honey was concerned that season, I might just as well have brimstoned them. In handling this matter of swarming it will not do to thwart the bees—that is, once let them get the desire and then forestall them. The thing to do is to *keep away the desire*. Control of increase based on any other plan is almost sure to be a failure. "To keep away the desire." Right here Stenog, who is taking down these answers, stops long enough to observe: "There is a great sermon in those words; for what evils have not been hatched by a failure to kill the brood by crushing out that *desire*?"—ED.]

L'APICOLTORE says wax is purest cooled slowly, but of best color when cooled rapidly. It advises slow cooling, scraping off the bottom of the cake, then a second heating, followed by putting the dish in cold water to cool immediately. Is it possible that the second cooling will give it a better color than it had before? [You may put this down as an axiom in the wax business: The longer the wax is kept hot, the darker will be the color when it cools; but it is true that, when it is cooled slowly, impurities settle to the bottom of the receptacle. It is our practice to melt up about 1000 lbs. of wax at a time, and then we let it cool just as slowly as possible. Just before it congeals it is drawn off into cans; after that it is melted but once, and kept in that condition only long enough to bring it to a sheeted condition, and that usually is less than an hour. The trouble with the old methods of making foundation is that they required the old-fashioned dipping-tank, a vessel that had

to be deep enough and wide enough to take in a dipping-board. The wax in this tank, or at least some of it, would be kept hot all day; and we found by experiment, several years ago, that keeping hot for three or four hours, or frequent reheating, would darken wax very perceptibly. Wax in the first place, then, should be kept hot only long enough to let impurities settle to the bottom of the receptacle. After that it should be worked into foundation about as soon as it is melted. The Weed new process is worked on this plan. There are no dipping-tanks, and not at any time during the sheeting a larger supply of *melted* wax than two common pails would hold.—ED.]

"THE VETERANS probably do not care for instructions to beginners," says the editor, p. 101. I don't know whether you call me a veteran (been puttering at the business 37 years), but I don't dare to skip instructions to beginners for fear they contain something I don't know. If I skip any thing, it isn't instructions to beginners. [You say you do not dare to skip instructions to beginners. If you do not, very likely there are many others who take the same ground. If so, then it would behoove us to put more matter in, suited for the novice. It is true, that many and many a time a veteran may pick up something from a brother bee-keeper who "supposed that every veteran knew it all the time." Mr. Doolittle, for instance, gives special instructions to beginners; but very often I have picked out from his department a number of ideas new to me. I should like to have veterans as well as beginners express themselves a little more on this question. It will cost no more to make a journal to suit the needs of the masses of bee-keepers than that of the select few; but the editor and publisher must know what the masses really desire. A great many have written so far, "Keep the journal as it is;" but this number, however, represents only a very small per cent of our *silent* subscribers who I am sure have preferences.—ED.]

PICKINGS

FROM OUR NEIGHBORS' FIELDS.

BY "STENOGRAPH."

How doth the little busy bees
Improve these wintry nights?
By telling yarns and cracking jokes,
And looking at the sights.

AMERICAN BEE JOURNAL.

Dr. Miller has found snakes under and in hives, but he thinks they do no harm.

F. A. Snell does not want snow over the hives, as it starts brood-rearing too soon. It keeps the bees too warm.

R. C. Aiken has a proposed experiment to show the comparative yields of comb and extracted honey. It is to be hoped that Mr. A. will settle this vexed question.

Concerning swarming, Frank Coverdale says :

For years I used 10 and 8 frame hives side by side, and the former swarmed fully as much. I am fast coming to the conclusion that it is not so much in the size of the brood-chamber as how completely it is filled with brood before the opening of the harvest.

As to the size of hives, C. Davenport has the following to say:

I prefer and use a hive containing only 8 standard-size frames, and with them I can obtain more honey per frame work, feed, and capital invested considered, than I can by using larger hives. But I have no doubt 10-frame hives, taking a series of years, would give better results to the average bee-keeper, for, as a rule, it requires a much closer attention to details when using 8-frame hives; but many years' experience with hundreds of colonies, and with hives of various sizes, has convinced me that a 10-frame hive is better than a larger one for the production of comb honey in the Northern States.

On p. 49 Mr. Doolittle answers the question whether imported queens are better than those bred in this country. He takes the ground that the latter are not only as good, but even better. Mr. D. says he is informed that imported queens, unless it is very lately, are "from a promiscuous selection, mostly taken from second and third swarms." However that may be, if importations were to cease entirely there is no doubt that the present high standard of American queens would be continually lowering.

Concerning the value of bees to fruit, the following should be pasted in the hat of every bee-keeper in the land. It is from H. S. Price, of Livingston Co., Mo. :

I have the management of the Plunkett Hill Fruit-farm at this place, and I sold, last season, \$16.25 of fruit. It should have been that many hundred dollars; but the rain kept the bees in so they could not fertilize the blossoms, so we had only a "drop in the bucket." I was the only one who had any fruit to sell in this section of the country; and if it had not been for my bees I do not think I should have had 16 cents' worth of fruit. I am, as you will see, a firm believer in my bees.

Mr. Price says he will have no bees but the pure Italians, as they are better workers.

AMERICAN BEE-KEEPER.

Mr. Ben Honnett, of Colorado, says he would rather have one acre of sweet clover than two acres of any other honey-producing plant.

The editor, Mr. Hill, contributes some interesting notes on Cuba. After speaking of the disappearance of the bellflower and other honey-plants, he says :

But the light of liberty, which has been obscured since Oct. 29, 1492, is again perceptible on the horizon of this beautiful isle of the sea, and its liberation from the hand of tyranny will open up a field for new enterprise which will not be less important in the bee-keeping world than in other branches of industry there to be developed.

Replying to Mr. M. W. Shepherd as to the causes of hard times and low prices, Mr. G. M. Doolittle has the following to say, and it seems to me he says it pretty well :

If prices of sections and honey had kept step together, sections of the same quality as those of the '70's would be selling at \$5.00 per 1000 to-day, or section

honey at 6 cts. a pound. And yet with honey having more than one third the advantage over sections, Bro. Shepherd has the gall to hint high prices of sections as the reason for the low prices of honey, or "hard times."

Mr. Doolittle says the average price of honey in the 1870's was 25 cts. per lb., and 1-lb. sections \$12.50. Comb honey now averages 10 cents, while the sections have fallen to \$3.00, and are greatly superior in quality and workmanship to those made in the '70's. These figures are certainly suggestive.

An interesting article on Japanese bees is contributed by K. Aoyanagi. He says their history informs them that bees came to Japan from Corea about 1250 years ago. Their main bee is grayish-yellow, and when it gets older it becomes darker. Its queen has a good temper, and they "have no trouble in managing her." Japanese bees never suspend their work and stop brood-rearing during the summer. The writer of the article says he never uses smoke or veil. He says their bees are better-tempered than the Italians, but they are sensitive and easily frightened. They are readily robbed by the Italians. The comb made by the Japanese bee is so thin that it will not well stand shipment. The Japanese bees have a better sense of smell than the Italians, as they were first to find stray drops of honey dropped on the ground. For rainy countries like Japan the native bees are better than the Italians, as they do not stop work during a rain. Some Japanese bees were sent to Australia, and the people spoke very highly of them.

BEE-KEEPERS' REVIEW.

Mr. Taylor says, "There is nothing more valuable about a book or journal than a good index." I'm glad to see my old department appreciated by Mr. Taylor; but it is a fine job to make an index that will enable one to put his finger on a certain item the first time trying.

L. Kreutzinger has a new entrance-closer. He uses two sheets of perforated zinc, one in front of the other. By moving one strip a little to one side the perforations in the zinc can be made smaller or larger, or closed altogether. Sixty hives an hour can be opened in this way. Mr. Hutchinson calls it "handy and effective."

E. A. Daggitt is pleased with Taylor's criticisms, and calls for a high literary standard in our journals. Mr. Daggitt says he suffers from "the strange fatality of the compositor making mistakes in putting his writings into print." I see he does. He seldom has an article printed without one mistake. Mr. Daggitt says he has never favored open separators, and fears they are not going to be the panacea for that ill in bee-keeping they were claimed to cure. He says if an opening is good, a separator of wire cloth would be the thing, and yet the latter has been discarded. He seems to favor the non-use of separators, saying:

It stands to reason that, if closed separators discourage the bees from properly attaching the combs

to the sections, the less of them we have the better; and if we have none at all, still better.

It seems as if his fears were founded more on theoretical grounds than practical; for certainly much praise has come from those who have tried the open separators, and their increased sale is phenomenal.

To get *all* of the wax out of slumgum, I. W. Beckwith, of Wyoming, uses what might be called a very large lemon-squeezer. One of the levers is laid horizontally over a tub, its smaller end resting on a sawhorse. A hole, 2x3, is cut in the wide part of the horizontal handle, and this hole is covered with six or eight wires. The melted wax is put into a thick cloth sack, allowing it to drip into the tub as long as it will. The sack is then laid between the jaws, the upper lever is pulled down, and the rest of the wax runs between the wires into the tub. The sack is turned and pressed several times. Mr. B. says the residue shakes out like meal. The bag used is made of a grain-sack.

C. Davenport begins a series of articles on brood-chambers, covers, and even box hives that he prefers. The hive he prefers as a single-story brood hive is a plain eight-frame one. He makes the assertion that "Dovetailed corners add nothing to the convenience or utility of a hive," although he admits that it makes the strongest joint possible. He strongly advises painting hives. Mr. Hutchinson erroneously prints "Southern, Minn.," as Mr. Davenport's address. There is no such post-office as that. It should be Southern Minnesota—that is, the southern part of that State. I mention this so our readers will not waste time by writing to Mr. Davenport. Besides, there is no person of that name.

E. E. Hasty, who for so long a time has been the bright evening star of the *Review*, has sunk beneath the horizon of Michigan. He gives his reasons as follows:

I can't read up my journals evenings—have lost hope of being able to do so. The result of this is that whenever a "View" has to be made out, the reading first has to be done, all in a pile, and the time for it taken out of the few hours each day when I am at my best. The *net result* is that the number of days it takes to make out a "View" is unreasonably great, and has come to be unendurable.

Mr. Hasty is right. Nothing is more trying to the nerves than selection. I have known women to be unstrung by the labor of selecting a dress pattern. The ones they are compelled to leave cast a shade of regret on the one selected. So in telling what people write about in the journals, a condenser is constantly regretting what he can not reproduce. After a Hasty submergence, however, that star is now seen in the morning, in the constellation Gleanings, shining with its old-time glow.

THE MODERN FARMER AND BUSY BEE.

Mrs. Lizzie Ireland, of Norway, Kan., seems to have put a quietus on any further discussion of sweet clover being of value for honey and for fodder for stock. She says theirs was

sown on very rich ground, and grew six feet high, and was literally covered with bees from June 24 till the end of July. They had half an acre that was sown last spring. It was cut three times, and fed to hogs and calves that were shut up. She further deposeseth:

I just wish some of the cranks that call sweet clover a "weed" could have seen those hogs. They were the very best we ever had on the farm, and it was all on account of sweet clover. They were not just nice to look at, but tasted nice also, being the sweetest pork I ever tasted. We will try cows next summer.

In the issue for Feb. 1 the editor has a timely article on the necessity of teaching apiculture as a branch of farming at our apicultural colleges and experiment stations. He says it is as completely ignored as if there were no such thing. He says:

When the matter is presented to those in authority, the excuse is made that there is no money to pay even the board and traveling expenses of a competent man to present the subject, and yet money is found to secure teachers in every other branch of agriculture. Every two years the Legislature of Missouri is asked to make large appropriations for the benefit of the agricultural school, . . . but there is never a hint of any of it being used for the advancement of apiculture. At the present session the Legislature will be asked to make an appropriation of \$30,000 to advance horticulture, but there is no thought of any money being used to promote bee-keeping, although the horticulturist is largely dependent on the bees.



THE EVOLUTION OF THE HONEY-BOX.

The First Section Boxes; 2-lb. Boxes; Tall Sections vs. Square Ones; Sections $3\frac{3}{4} \times 5$ vs. Sections 4×5 ; A Few Cold Facts in Favor of Plain Sections.

BY J. E. CRANE.

One of the incidents of my childhood was the attempt of my father to secure "box honey." It seemed to be a common subject of conversation how this could be done. I remember well the boxes of those days. Some of them would hold from ten to fifteen pounds of honey, while others held twenty or thirty pounds. Some were made of planed lumber $\frac{3}{8}$ in. thick, while others were full $\frac{1}{2}$ inch, and unplanned. I remember my father trying to market such honey, and coming home much disgusted. Evidently a few boxes had overstocked the market, and he brought much of it home with him. Later a piece of glass was fitted into one end of the box to tell when it was full.

The first winter after I began to keep bees, more than thirty years ago, I made up a large lot of boxes nearly 13 inches long by 7 wide and 5 deep, with sides and ends of glass, while a few were half this size, which was as small as it was supposed at that time bees would fill or work in to advantage. In 1869 I secured a large crop of honey in this large-sized glass box, with a little in six and four and even

three pound boxes, which were regarded as apicultural curiosities rather than of much practical value. Later on, visiting the New York markets I found honey in boxes about four by six inches square by five deep inside, with two combs running lengthwise of the box. This was believed at that time to be about the limit of profitable reduction of the size of a honey-box; and for some, I believe I may safely say, for many years, was the standard size in that market.

I have spoken of my own experience, for I suppose it was the experience of many bee-keepers of that time, and shows the gradual reduction or change from a large to a small box. Often these two-comb boxes would have one comb fit for market, while the other was so poorly finished that the whole box had to be thrown out. How often in those days I wished I could in some way separate the combs! but in vain.

At last the section, with the edges of sides projecting $\frac{1}{8}$ inch beyond the top and bottom, appeared, with a separator to secure straight combs, and it was found possible to secure at least fair crops of honey in two-pound combs that could be glazed after they were filled. This has seemed to me one of the greatest inventions in the production of comb honey. And after a little time the two-pound combs became the standard size, from one end of the country to the other.

But presently some adventurous persons proposed a one pound box or section, as such would sell for two or three cents per pound more than the 2 lb. boxes. Others thought that the loss in quantity would balance the extra price obtained for the one-pounds. To overcome this loss it was proposed to have the 1-lb. boxes or sections built in large broad frames in the brood-chamber, and the size, $4\frac{1}{4} \times 4\frac{1}{4}$ square, was adopted, because eight of them would just fill a Langstroth frame, and, if of the proper thickness, would weigh an even pound.

So popular have these become that they have practically driven the 2-lb. sections from the market. There is, undoubtedly, quite a loss from the use of these small sections in quantity, as I find many intelligent bee-keepers find the product per colony has diminished, even in locations not overstocked with bees.

A very intelligent bee-keeper told me, some time since, that, in a conversation with Mr. Harbison, of California, who at one time was the largest bee-keeper in this country, if not in the world, said he could not afford to use the 1-lb. sections, even if they did retail at ten cents per pound, while the 2-lb. sections were retailing at fifteen cents, as the smaller quantity secured, more than balanced the lower price of 2-lb. sections. The fact that the many attempts which have been made to use a half or quarter pound section have ended in failure would indicate that a section of less than $4\frac{1}{4} \times 4\frac{1}{4}$ is likely to prove unprofitable and quite impracticable. I tried it myself some years ago, but have not cared to repeat the experiment. Bees seemed to dislike to build comb and store honey in very small

receptacles, or else were unable, when clustered in very small bodies, to secrete wax and build combs rapidly. We have learned by the use of single combs of various thicknesses, the thickness of comb that bees can build to the best advantage, which seems to be somewhere from 1 to $1\frac{3}{8}$ inches.

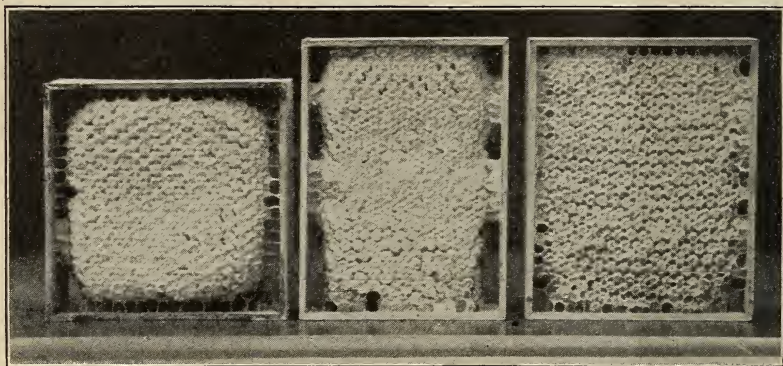
With the difficulty of using sections much smaller than $4\frac{1}{4} \times 4\frac{1}{4}$ there has been a desire to change the form by making the section narrower and taller. Such, it is claimed, are more artistic in form, and appear to the buyer to contain more honey than the square section. If this were all it is doubtful if such a change would pay; but there may be other and more important reasons.

While passing through the Seventh St. market, in the city of Washington, some time ago, I saw a lot of honey for sale, in plain sections $3\frac{3}{8} \times 5 \times 1\frac{1}{2}$. I noticed it more closely as I did not remember to have seen honey put up in this size of section before, and had thought seriously of trying this size myself in place of the $4\frac{1}{4} \times 4\frac{1}{4}$ I now use. I was much disappointed in the appearance of the honey, for,

sections $4 \times 4\frac{1}{2}$ and $3\frac{3}{8} \times 5$ that would average decidedly better. Some of the $4\frac{1}{4} \times 4\frac{1}{4}$ were finished better.

While in Washington I saw Mr. Danzenbaker's honey, of which I had heard so much, and with his permission I selected an average section, or tried to do so. I also tried to get an average $4\frac{1}{4} \times 4\frac{1}{4}$ section as they appeared in that market, and had them photographed together. Which do you like better? While in W. I also saw honey in the 4×5 section that was produced by some one, I don't know who, that looked quite as well as Danzenbaker's honey—I thought a little better—but I did not tell him so. Since my return home I have received a photo of some produced here in New England—I have now forgotten by whom—in this same style of section (4×5), that looks about as well as either. I believe all were produced in the Danzenbaker hive, as the sections are of the same size.

Does a slight difference in the form or shape of the section influence bees in filling it with comb and honey? If so, what is the best shape and size for a section that will weigh a pound



THE COMPARATIVE FILLING OF THE THREE SIZES.

although it seemed evident it had been made in a section of country where there was a good flow of honey, yet the combs were poorly built out, even with the advantage of a fence.

I went to look at it again the next morning, and finally bought an average of the lot, to have it photographed, and it is the middle one in the plate I send with this. I saw another lot of honey in the same market in the same style of box, but no better. Had the foundation been cut too narrow, or were the sections too narrow to suit the bees? or was it bad management on the part of the bee-keeper. It may have been any one of these; but I was inclined to believe that the width, $3\frac{3}{8}$, was too narrow to suit the bees.

A little later I was in the New York market; and although I must have seen many tons of honey in this size of section, and some even of less width, stacked up with glass fronts, I do not remember to have seen more than a little that would average any better—even the face combs of the cases; but I saw some in

to secure the best results? My own experience teaches that bees will finish sections $1\frac{3}{8}$ thick much quicker and better than those $\frac{1}{2}$ inch thicker. Will $\frac{1}{4}$ or $\frac{3}{8}$ put on or taken off the edge of a section make much difference? From what I saw in the markets I am inclined to think it does—i. e., when it is already as small as the bees will work in readily or to advantage.

A very intelligent bee-keeper told me recently that he had tried the $4\frac{1}{4} \times 4\frac{1}{4}$ by the side of the 4×5 sections on the same hives, and the bees would enter and fill and finish the 4×5 sections first. This is "important if true," as the newspapers sometimes say. We have all observed, doubtless, how much faster bees will build comb downward than sidewise. Near the close of the A B C of Bee Culture is a plate, No. 24, showing how bees build natural combs. Instead of one long comb extending from near one end to the other on the under side of the top-bar, as we should naturally expect, we find several small combs, longer up

and down than sidewise, almost the exact proportion of a 4x5 section. How much the instincts of bees are modified by the use of foundation I can not say.

Another advantage of this size of section is that it has a larger comb surface, and will weigh a full pound, while not as thick by $\frac{1}{8}$ inch as the $4\frac{1}{4} \times 4\frac{1}{4}$ section weighing the same, and this may be its strong point.

Will the evolution of the honey-box bring the plain section into general use? I believe it will. One dealer in Washington told me he would pay three cents per pound more for the 4x5 plain-section honey than for the old-style sections. Indeed, I was offered two cents per pound more, for 5000 lbs. of clover honey, to be delivered next fall, than I have been receiving of late for my best grade of honey, if put in plain 4x5 sections. In New York I inquired of Mr. Segelken for his plain-section honey, that I might compare it with that in old-style sections. He said he had very little left in plain sections, as such lots were picked up first by retail dealers, who preferred them to the old-style sections. I found the same true in Albany, N. Y., where I stopped to look over the honey. As these retail dealers are not in the supply business I thought their opinions worth recording.

I believe the honey-section of the future is likely to be tall rather than square, and thin rather than thick, and plain rather than old-style, as such seems to best suit the instincts of the bees and the demands of the honey-trade.

Middlebury, Vt.

[There is, perhaps, one factor referring to the $3\frac{3}{8} \times 5$ and 4x5 size of section that you have not taken into consideration. As you will recall from sections you saw while here, the cross-cleat, or that portion of the fence bearing against the uprights of the section, has a good deal to do with the filling of the section itself. All supers sent out last season, taking sections $3\frac{3}{8} \times 5$, had cleats on the fences $\frac{1}{2}$ inch wide. On the other hand, all supers taking the 4x5 had cleats on the fences only $\frac{1}{4}$ inch. The width of the cleats alone might make all the difference between the filling of the two classes of boxes. This difference between the wide and narrow cleats was so marked that we have this year decided, as you may remember, to make cleats on *all* our fences narrow instead of wide, as last season.

But aside from the matter of width of cleats to fences, it is possible that the 4x5 section has some advantages distinctly its own. Read R. C. Aikin's article, just following.

As we make supers to take both kinds of sections, 4x5 and $3\frac{3}{8} \times 5$, it does not make a picayune's difference to us which we sell. They are both supposed to hold a pound; but the larger one is only $1\frac{3}{8}$ inches thick while the other is $1\frac{1}{2}$ inches.

I am not at all surprised that you found a decided demand for honey in the plain sections in the markets you visited, and that you found that such honey would bring a higher price. Some of my friends have thought that I was over-enthusiastic, and made stronger

claims for the sections a year ago than subsequent developments would warrant. Dear me! I was not prophesying, but telling only what bee-keepers of long experience had told me. It is no little satisfaction for me now to see those same statements verified by so careful and conscientious an observer as yourself.

It is no little regret to me that we are unable (and it would be unwise if we could) to publish *all* of the unsolicited testimonials in favor of plain sections. The evidence we have already given ought to be sufficient. But there are always some who will be doubting Thomases, even then, for "none are so blind as those who will not see."

Here is the article from R. C. Aikin, that I have taken from the *Progressive Bee-keeper*. With what is said above by Mr. Crane it comes in very nicely.—ED.]

TALL VS. SQUARE SECTIONS.

Why the Former are Better Filled out.

BY R. C. AIKIN.

[I have known that the tall sections seemed, apparently at least, to be filled out a little better than the square ones, under the same conditions; but I never knew all the reasons *why*. Friend Aikin has offered the best explanation of any thing I have seen. The italics are mine.—ED.]

I favor a section 4x5 inches, and to stand on end, or 5 inches deep. Such a section will finish nicer than a shallower one. About 20 years ago I used a section 5x6, made of four pieces, the sides about $1\frac{3}{4}$ wide, and the top and bottom bars enough narrower to make the bee-entrances. Since those days I have had more than 100,000 $4\frac{1}{4} \times 4\frac{1}{4}$ sections filled, and never were the latter as nicely finished on the average as were the former. The reason, however, was not all in the size, but was largely due to the construction of the section. Those 5x6 sections were sawed out and of four pieces (to be nailed), the top and bottom the same width their entire length, or the same in width as the thickness of the comb in the section. The more modern one-piece sections have the bee-entrances scored out so tops and bottoms are narrow in the middle part, but round out to the full width of the sides when within $\frac{1}{2}$ or $\frac{3}{4}$ of an inch of the corner. The top-bar that is just as wide as the thickness of the finished comb that is attached to it is much easier for the bees to finish to. *Just look at any modern one-piece section of honey, and see how the finish is worked out even with the narrow part of the section top, but dubbed or rounded off when it comes to the wide part, and you will at once comprehend that the top narrow its entire length will finish the nicer of the two.*

Before the adoption of the 1-lb. section by bee-keepers I used many larger sizes, and I believe I know that the larger ones made as before described finished nicer than the 1-lb. size. In addition to the better finish caused

by the different construction of the top and bottom bars, the proportionate depth has something to do with it. The bees in building a comb are inclined to stop the downward progress before attaching to the bottom-bars, leaving a space or passage between the bar and the comb. They evidently do this instinctively. Look into any box hive, and you never find the combs attached to the hive bottom unless the combs have settled after construction, causing them to rest on the bottom, when of course they would fasten, as they do all surfaces that touch. Again, look into any brood-chamber in which the combs have never been tiered up above another set, and but few are attached to the bottom-bars. Not only are they not attached to the bottoms, but almost invariably are the corners rounded more or less. Now apply this to sections. Suppose a section were only two inches deep, do you not at once comprehend that, if a space is left between the bottom-bar and the comb, and the corners rounded, there could be but little more than one inch of the comb edge attached to the uprights? *Now increase the depth of the section, and every bit of the increased depth will be attached. The deeper the section, then, the greater the proportion of the comb that is attached to the wood.* This is another reason why I want my section deeper.

I think I hear some one—may be Doolittle will do it—say that the deeper section will not be finished as quickly as the shallow one. Let us reason a little on that. Any one who has ever observed comb-building knows that combs *always* progress downward *much* faster than sidewise. Hive a swarm on starters in an L. frame, and, if a small swarm, a comb will be started down, and reach the bottom-bar about in the proportion of 5 or 6 inches wide to 8 in depth. *The universal rule is that in comb-building the downward progress exceeds the sidewise in a proportion of about 3 to 2.*

If, then, comb-construction goes on in this way, a section that is as wide as deep will be finished down the center before it is at the outer edges. This will be made plain by looking at combs in all stages of progress.

Has not every apiarist who has used the L. frame, or any long and shallow one, noticed how slow were the ends and lower corners in being filled and finished? The same thing can be seen in the working of full sheets of foundation in either brood frames or sections, the work progressing much in the form of one's hand when suspended with the fingers downward.

It is quite evident, then, that a section, or brood-frame either, in which the width and depth are in proportion of 2 to 3, will be filled with comb and finished quicker than when the width is equal to or greater than the depth; the greater the width in proportion, the more uneven the work. So true is this that it becomes a source of much aggravation in getting combs well built out to the ends of L. frames, especially with weak or moderate-strength colonies in full-sized chambers. I say this after having used brood-frames ranging in size from $4\frac{1}{4}$ deep and 17 long (the L. frame being the longest I have used) to 11 in

width and 14 deep, and many intermediate sizes. Also sections $5\frac{1}{4} \times 6\frac{1}{4}$, 5×6 , 4×5 , and $4\frac{1}{4} \times 4\frac{1}{4}$. Some of these were used the short way up and down.

Because of this feature of comb-building, i. e., that they build downward more rapidly than sidewise, a section or frame slightly deeper than wide will be finished as promptly as one of same capacity as wide or wider than deep. More than this, the deep and narrow section or frame will be better attached and finished at the sides. A section $4\frac{1}{4} \times 4\frac{1}{4}$ with the comb attached to the top and both sides clear down, gives, in round numbers, $12\frac{3}{4}$ inches of attachment, while a 4×5 similarly attached to 3 sides, gives an attachment of 14 inches. A $4\frac{1}{4} \times 4\frac{1}{4}$ section equals $18\frac{1}{8}$ square inches, and 4×5 equals 20 square inches. Thus the $4\frac{1}{4} \times 4\frac{1}{4}$ section has nearly 2 square inches less comb than the 4×5 , and $1\frac{1}{4}$ inches less attachment, and $\frac{1}{4}$ inch more detached comb, premising, of course, that neither is attached to the bottom.

Considering, then, the better attachment and better finish of comb, I prefer a 4×5 section. Having a section so deep, and the super 4 sections long, I can have my brood-chamber only 16 inches long, and that is why in a former article I spoke of this length of hive. A close-fitting closed-end frame 5×16 , and a 4×5 section, will both work in the *same* chamber; thus a super and brood-chamber part may be identical and used for either, save in the inside furniture.

PLAIN SECTIONS A SUCCESS.

Better Filling and Higher Prices.

BY I. A. WOOLL.

I have been reading with much interest the articles pro and con relative to the new fence and plain sections as sent out by The A. I. Root Co last season and have concluded to give our experience and opinion relative to them.

We were among the unfortunate ones who were a little too late in placing their orders for supplies last season, and, consequently, we did not get our first installment of the new fixtures until late in June, and at a time when all our hives were provided with the old-style sections; but as fast as they were filled we replaced them with the new plain sections and fence separators. These were put on too late to get a fair trial, for our white-honey season was then nearly over, and we had no buckwheat or other fall honey on account of a drouth that prevailed in our particular locality at that season. However, we received four or five well-filled cases of basswood honey in the new sections; and to say that they were nice would be putting it lightly. It was a real pleasure to open those crates of honey and note the difference between them and the old-style section in regard to freedom from propolis and consequent ease of cleaning. With the old-style open-top section we noticed that the bees always stuck a wad of glue at the point where the slot came in contact with the

separator, and this was always hard to remove, because it was so near the honey in a position hard to get at without injuring the honey with any scraping-tool we might use; and we generally found it necessary to use the fingers in removing it. But, presto! when the fence was loosened from the row of plain sections we found but little propolis adhering to the section, or separator either, and one motion with a knife would clean a whole side of the section clean; and, indeed, it would pass as clean sections in many places with any cleaning at all; and we noticed this—that the aggregate of propolis used in the entire crate was fully 50 per cent less than that in the old-style section-case with plain separators.

Now, if the time of our little friends at the season of gathering honey is worth anything at all, it seems to me that here is a saving in that the labor employed in gathering the propolis could be used in collecting more of the coveted sweets.

Well, we had two 24-section crates of the tall sections, $3\frac{5}{8} \times 5 \times 1\frac{1}{2}$ plain, which we took to the grocer, thinking we had something a little nicer than had ever been taken into our town. We took a 12-lb. case in and asked what they could pay for nice white honey. "Well," he said, "it is worth 9 cts.; but we are not in need of any just now." I told him I should like to show him what I had, and began setting them out; and he and the few customers in the store began gathering around and uttering exclamations of surprise at the beauty and perfectly finished appearance of the new sections.

"How much have you like this?" said he.

"Four cases," I said.

"Well," said he, "I guess I will take what you have at 9 cts. per lb."

I said I should have to have 10 cts. for such nice honey as that this year.

"Well," he said, "bring it in; and if it is all like this I will pay you 10 cts."

When we went out to get the other three cases another grocer had got his eye on the honey through the glass cases, and wanted to know if it was sold. I said it was.

"What do you get for it?" I told him.

"Have you any more like it?" he asked.

I explained that this was simply a trial of this style of honey-package, and that it was all I had this season. He tried to get me to let him have that honey at 10 cts., or a part of it; but, of course, I had to refuse, for I knew the other man would take it all, which he did.

Well, later we sold a quantity of honey to The A. I. Root Co., and by their direction shipped it to the Columbus Commission and Storage Co., Columbus, Ohio. When packing this honey we put in one case of the new plain sections, $4\frac{1}{4} \times 4\frac{1}{4}$, and marked them so on purpose to call the attention of the dealer to it, and with the result as given in Sept. 15th GLEANINGS.

As to the relative value of the two cases (old and new) for the greatest yield of weight of comb honey, we shall require another season's trial to decide definitely; but we are of the opinion that the easy access from one section to another will increase the production.

On the whole we are thinking quite strongly of putting the new fixtures in all our cases the coming season, with the possible exception of one or two for comparison.

Elsie, Mich., Jan. 7.

THE FENCE-SEPARATOR SYSTEM.

Fence Supers Entered Sooner.

BY M. A. GILL.

Perhaps a few words giving my experience with the plain section and fence separator would be appreciated by a few of the readers of GLEANINGS.

First, I will say I was much interested in the fence-separator system when it first came up for discussion, and was amused at some of the arguments that came out setting forth that the system would not work; and when we ordered 20,000 no-beeway sections and 700 supers with fence separators, several of the wise ones said the same as others had said in the journals, that it was impossible for loaded bees to pass through the spaces.

I had spent too much time during the previous twenty years in studying, not to know that the spaces were ample, and that the system was practicable, else I should not have ordered so many to start with. I soon saw that, to raise honey by this system, it was necessary to have hives level. This has been my hobby, as I never use separators, and would not now if I could not have the fence.

One of the system's faults is that, if any mishap happens to one section, there are generally three sections spoiled; for if a starter breaks down, the bees will build through the fence on each side and spoil two more. So I said there are two good features, for any thing that will make careless people set their hives level, and securely fasten all starters, is a good thing.

I will say that, while casing 400 cases about equally divided between the no-beeway and the old style we didn't have enough crooked or broken honey for table use for two families.

The past season in Western Colorado was a poor one to fairly show up any system for comb honey. But I could readily see that the bees would occupy the supers much sooner than with the old style, especially if separators were used, and that the outside sections were, many times, finished first, which would reduce the unfinished-section business to the minimum.

With regard to the shipping-cases needing separators, my experience was that they would stand shipping better than the old style, as the honey was *always* attached to the bottom of the section.

While speaking of shipping-cases I think we should have a 24-lb. case for the no-beeway sections; for when you sell a man a regular 24-lb. case, and tell him there is 32 lbs. in it, he will say that can not be, for it's full with only 24 lbs. in it. It at least makes an explanation necessary, and you know the average grocer who has sold a few cases of honey can tell you more about honey than you ever dreamed of;

and if he takes your 32 lbs. of honey in an old-style 24-lb. case he will want the extra 8 lbs. at a discount.

I could say much more in favor of the fence-separator system for comb honey, but will only add this: In my opinion the system has come to stay, for, in every manipulation, from start to finish, it is preferable to the old style.

In this dry climate the shrinkage is more than the wedge takes up. But I prefer to wedge on both sides with upright wedges, at each end and middle. This gives the Pettit system, or loafing-ground, to my satisfaction at least.

I like your changes for 1899 in the fences, and the system now seems nearly perfect. I have been told that I would use anything that the Roots would make, and call it all right anyway. This I deny; for you have manufactured two things, and sent them out to the trade, that I would not use. One was the most provoking thing I ever saw—your Clark cold-blast smoker. The other is or was the most comical thing I ever saw, and that is your little strainer sent out with extractors. I remember poking one of them into the bung of a barrel in Kentucky, and filling it with thick yellow poplar (tulip) honey. That was ten years ago, and I don't know whether it has all run out yet or not. You used to send them out that would hold about two pounds. I heard a man say he filled one of them (dry) and hung it up in his cellar, and it didn't even leak for two days. I will say, however, that the honey was alfalfa that would weigh close to 13 lbs. per gallon.

Boulder, Colo., Feb. 6.

HIGHER PRICES FOR PLAIN-SECTION HONEY.

I had your plain sections in use with fences, and must say that I am pleased with them, particularly the $3\frac{3}{8} \times 5 \times 1\frac{1}{2}$ sections. They were very nice, better filled than the old style, and made a great deal better show—so much so that they brought me a better price, and they sell much quicker. I am so well pleased that I will use none but plain sections this season, and have sent my order for such.

Alphin, Va., Feb. 6. P. I. HUFFMAN.

ECHOES FROM THE CALIFORNIA STATE BEE-KEEPERS' ASSOCIATION.

Ninth Annual Session, Jan. 11 and 12.

BY J. H. MARTIN.

Although there was an encouraging rain of two inches the day previous to the meeting, there was a very light attendance. Even some quite extensive bee-keepers who live within easy distance, or even in the city, were conspicuous by their absence.

President C. A. Hatch, at last accounts, was feeding four coal-stoves for comfort in Wisconsin, and, lacking some 2000 miles of being available, Mr. C. H. Clayton was elected president *pro tem*. The treasurer, who some weeks ago was reported as lost in the wilds of Oregon, and for whom there was some solici-

tude, turned up in due time. Secretary McIntyre felt much relieved when the man and the funds—especially the latter—came in sight.

The first session was held at 2 P. M., and the first paper was by Mr. Geo. W. Brodbeck, on "The Bee-keeper of the Future."

The secretary read a paper sent in by Mr. W. A. Pryal, of Oakland, subject, "The Gigantic Honey-producer, the Eucalyptus."

This paper brought out a lengthy discussion, and it was agreed that, among the many species now in California, *Eucalyptus robusta* was the species eminently adapted to the needs of the bee-keeper. The bloom is the most profuse from November until April, and just when needed to help the bees through the winter.

Mr. Mendleson led quite a lengthy discussion upon feeding. He had fed over a ton of sweets. He preferred to reduce the number of combs, and feed so as to crowd the queen to a small space for breeding, otherwise quite an amount of the stores would be used in breeding a useless number of bees.

The meeting on the 12th was, during the morning session, devoted to foul-brood laws and the treatment of the disease.

Mr. McNay, of Portage, Wis., was in attendance, and gave an interesting talk upon methods of selling honey, the proper package to use, and, above all, packages free from rust and dirt.

He finds that extracted honey is gaining in sales, and for table use. Some of his customers called for basswood honey solidly candied. He found that these salesmen had a stand in a conspicuous place in their store window; the barrel of honey was placed thereon, the hoops cut off, the staves removed, and the honey was chipped off in chunks in size to suit the buyer.

Mr. Lambkin, of New York, was in attendance, and gave a few ideas respecting sections and fences. He said they had been in use in his portion of the State for 20 years; he was strongly in favor of their use.

Mr. Wilkin addressed the meeting upon the subject of co-operation.

Mr. Wilkin was elected president for the coming year.

Mr. J. F. McIntyre was re-elected secretary. The present treasurer continued.

There was an estimate that fully 50 per cent of the bees in Southern California had died during the past dry season.

It was with regret that we learned of the death of J. P. Israel (Skylark). He was one of the veteran bee-keepers of California.

Samples of honey were on exhibition from Northern California, Oregon, and Washington.

Mr. Farr, who has apiaries in Acton, Cal., was present. Mr. Farr is one of those bee-keepers who migrate during a dry season. His migration this past season took him to Utah. Mr. Farr was quite reticent on the subject; but we learned from other sources that the cost of moving a carload of bees to Utah was \$400, and Mr. Farr produced honey enough to sell for \$2400. This proved to be a good move, even if it was a long one.

Should the coming season prove a dry one there will be many more long moves. Some bee-keepers are looking over into Inyo Co., and others into Arizona. We have an abiding faith, however, that it will rain to the required amount.

SWEETWATER APIARY.

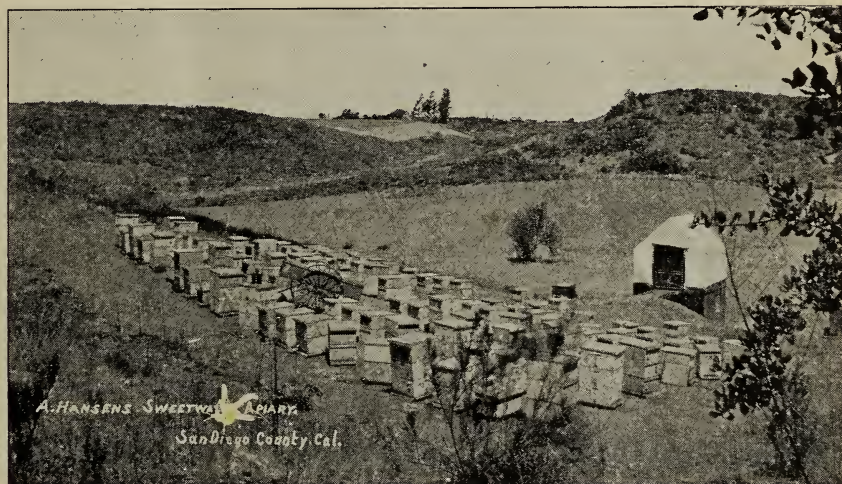
Honey Flora in the Region of National City, Cal.;
an Ideal Extracting-house; a Staple-spaced
Frames a Success; the Root Ship-
ping-cases; a Suggestion.

BY ARTHUR HANSEN.

Mr. E. R. Root.—Pursuant to your request I hereby give a brief sketch of my Sweetwater Apiary. The site is just over the hill east from "Palm Terrace," the *bon ton* of National City, inside its corporate lines, between the Sweetwater River bottom and famous Paradise Valley, about three miles from the Bay of

know much about its yield. In 1897 we had our first material aid from the sugar-gum, of which so many line the streets of National City. Bloom is from June on.

One of the photographs shows the two-story honey-house. It is 10x10, matched lumber, two sections to each side, bolted together, high enough to stand up in, good floor, 10-oz. duck tent over a frame on top, frame in sections, building painted with oil and ochre. The two spring doors have double-acting spring hinges, so the cart pushes open either way. Upper story contains four-frame Stanley reversible extractor, and R. Wilkin's uncapping-box, with a Wilkin strainer between the two, and a workbench. The strainer empties automatically through a tin tube into the tank below, which stands high enough to admit a 5-gallon can under the faucet, capacity 1200 lbs. The cart takes combs crosswise; space on bottom for loose pieces of comb, two sliding covers on top; sides can be removed so that the platform can be used to convey hives to the wagon



A. HANSEN'S SWEETWATER APIARY
San Diego County, Cal.

San Diego. Its resources are: First, pollen from the willows about Christmas; a warm January gives plenty of nectar from this source; and from the blue-gum (eucalyptus) I have had considerable brood by Feb. 1. Orange-bloom is best here in February, March, and April. The bloom of 1897 was the most profuse, with largest yield of nectar. My bees worked so strong on the old orchards of Paradise Valley that people from there called my attention to the wide path they maintained. Wild alfalfa blooms at the same time, and is very good when it does yield. I noticed best yield on the coast in 1893. It springs up where a fire has run over land, and loves south and west exposure; wild buckwheat is the same in this respect, which fact Rambler and I noticed in 1892. White sage and wild buckwheat bloom in May, June, and July, followed up by goldenrod and tarweed. The latter is hard on comb-honey producers. Some sweet clover grows along the river, but I do not

during moving. The sun extractor is California style, with burlap frame for catching the wax, and compartment below for the honey. I think it leaves more dross than a Doolittle.

I started in with eight-frame hives, running for comb honey, in 1889. In changing over to extracting I got nine-frame hives; then I had some 11-frame made at the mill. These I run mostly three-story, the queen ranging over all. These give me the best results. After getting a Barnes saw I settled on 10-frame hives, parts interchangeable; handhold cleats form the rabbets and help to tie the sides, which fit into rabbeted ends. A 1½-inch hole in each end, protected by a galvanized flume gate, with slide, affords ventilation at pleasure.

When starting in the bee business there were no Root goods to be had on this coast, and for comb honey a frame was put on the market enough shorter than the Langstroth to do without the section-holders. I use this frame

with No. 9 double-pointed tacks, 4 to each frame, at opposite sides, half way down the end-bar, and on the top-bar just inside the shoulder or rebate.

The top-bar is $1\frac{1}{8} \times \frac{5}{8}$, flat, with saw-kerf for foundation, resting on tin rabbet. End-bar is $1\frac{1}{8} \times \frac{5}{8}$, and the bottom-bar is $\frac{3}{4} \times \frac{1}{4}$. Spacing is $1\frac{5}{8}$. Frames of this size are now used to some extent in the county, and I have been requested, before this, to give a description of the same.

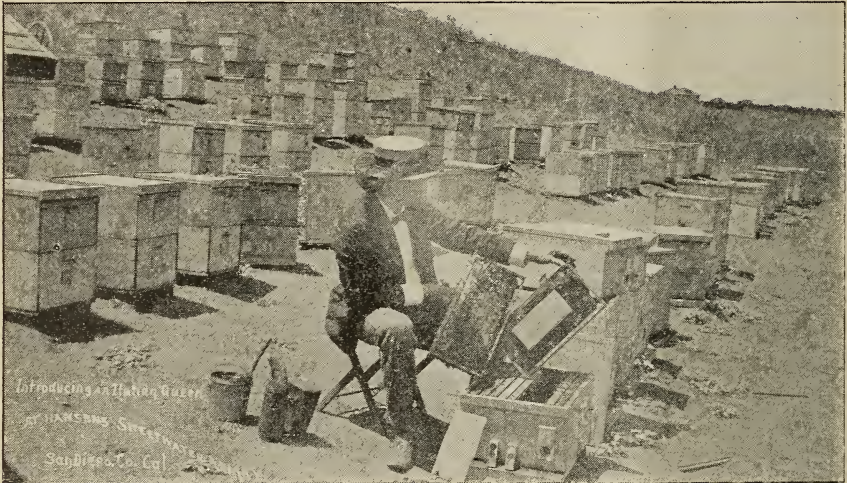
For Dr. Miller's benefit I would say that I have used the stapling device since 1892, with good results, in the brood-chamber.

In my travels through Oregon, Washington, and Idaho last summer I handled a great many Hoffman self-spacing frames, and I am convinced now that the amount of propolis used in my section of Southern California is not sufficient to offset the advantages gained by their use, if they are Root's or any other first-class make, in pine. Some Washington dealers use cedar, but it is too soft to stand the wear. V edges dent in and split off.

hill is that of Mr. D. K. Horton, of Boston, on Palm Terrace.

All new hives are painted a straw color, with ocher and white lead. I use queen-excluders under drone comb; but Peter Lux, of Encinitas, Cal., advanced an idea that I want to try another season; namely, to get the combs built out wider by continual spacing until the cells are too deep for the queen to lay in. Has any one else tried this? I aim to keep down increase by making very liberal use of full sheets of foundation in the brood-chamber, using the brood in upper stories, in lighter colonies, and making nuclei to care for extra queens. Last year was a hard one; but Mr. Herbert Veall, who runs the apiary, writes me that he hopes to pull through the 95 stands that he reduced the apiary to in the summer. Mr. Veall expects to carry out my plan of moving to the mountains for a second crop, if the season warrants it this year.

Just a word in regard to comb-honey shipping, from a dealer's standpoint. While in Spokane I saw some Yakima comb honey



My hives are in groups of five, with the corner hives at an angle, and alley for cart at alternate rows, with the hives facing out.

The tree in the corner is a mountain mahogany, and the brush is a scrub pine. A lone elder-tree stands out in the stubble-field back of the honey-house. The dark spots on the side-hills are cactus, chollas, and brush, with beautiful homes in the distance.

In the other photo I am introducing the first Italian queen of a batch of 16. Her majesty is under the wire cage on hatching brood. It was in the fall of 1897, and I am making some increase besides superseding undesirable queens. One full and one empty mailing-cage and a wire cage show in front of the hive. A Corneil smoker stands watch, and the brush in the pail of water is made out of old rope. The short putty-knife on top of the upper story is my hobby for an indispensable tool.

The residence and orange-grove over the

come in, crated as per directions in Root's catalog. In addition a cleat was nailed across the ends of each cover, thereby preventing splitting in opening up, and adding a certain spring to each case while in transit. I think supply-dealers ought to add this cleat, and California comb-honey producers and shippers should follow Root's directions, as their product (that of the California honey-producers) is losing ground up here on account of the breaking-down.

Wallace, Ida., Jan., 1899.

[Every thing about this apiary betokens neatness, and a general system calculated to produce the largest results with the least labor. The comb-cart and the extracting-house, the upper story of which is used for extracting and the lower part for storage, are evidences of these. Where the building can be on the edge of a side-hill, allowing the stor-

age-tank to be under the extractor, the arrangement is as nearly ideal as any thing can be.

Mr. Hansen does not say any thing about his method of introducing, but I should judge by the engraving that he uses something very nearly like the Peet method—a plan whereby the queen is caged right on the comb, her liberation being effected by the bees gnawing under the cage and letting her out themselves.

The shipping-case that we make has been constructed after consulting bee-keepers and commission men alike. If there is further improvement we can make on it without increasing its cost too much we should be glad to incorporate in. Cleating the covers, as has been spoken of, might be objectionable in some markets, and at the same time increase the cost of the cases. If there are others of our subscribers who think it would be an improvement, we may think best to adopt it.—
ED.

CUBAN HONEY AS COMPETITOR OF AMERICAN HONEY.

The Effects of Glucose on Honey Markets; Writing to Members of Congress in the Interest of a National Pure-food Law; how the Dairymen Fought Oleomargarine; a Valuable Article.

BY C. DAVENPORT.

In GLEANINGS for Dec. 15 a subject is touched upon that is of vital interest to all producers of honey in the United States. I refer to honey from Cuba. If extracted honey can be produced there for two cents per pound which is superior to that from white clover (and I can see no reason to doubt it), it is probably true that there is no reason why comb honey of the same quality can not be produced proportionally cheap; and if the import duty is removed it can be laid down in any eastern city by boat at a very low cost compared to what freight by rail would be. It will be noticed that I have referred to Cuban honey as being superior to white-clover honey, and this will hold true in a large way if its only difference consists in having a milder flavor, for many think that from clover has almost too strong a taste; and, aside from its quality, from what has been said in regard to the matter it is to be inferred that Cuba is capable of producing immense quantities. In fact, as I understand it, California would be out-classed in this respect; for while that State produces immense crops it is also, like most if not all other States, subject to failure; and I believe a failure of the honey crop in Cuba is something unknown. But if the honey from another area, equal to California in productiveness, is thrown on the markets of the United States it does not require much imagination to see what an effect it would have on prices. As for our having patriotism enough to receive this Cuban honey, this is absurd; and in my opinion it is not patriotism, but treason; for patriotism is, as it were, if I am right, the welfare of one's country and its people; and

if any are troubled with an excess of it in the former respect, let them reflect that this country is, and probably will be for many generations, heavily taxed on this account. But, aside from all this, we who depend entirely or mainly upon bees for our living know that, if prices for our product go much lower than they have been the last few years, the bees will have to be given up, and our attention given to some other pursuit. The prices of honey have of late years been steadily declining; and while there are undoubtedly a number of reasons for this I believe one of the main ones is adulteration; and this is becoming (in fact, already is) a great curse to this country—not only in regard to a good many kinds of food, but a great many other products as well. The one article of glucose alone is doing great harm in a financial way to those engaged in our pursuit; for there is, I think, more of this produced annually, and sold mainly for food purposes, than the entire annual product of honey. And, aside from the money loss to bee-keepers and others, this stuff, I think, does much harm in other ways; for many who consume much of it may ruin their health; for, while not necessarily injurious itself, I understand that acids that are used in its manufacture remain in it in sufficient quantities to make it so in such grades as are mainly used for commercial purposes. If we can get the right kind of national legislation in regard to pure food it will in a financial way largely, perhaps, more than offset the effect of any amount of honey that can be produced in Cuba. The Brosius pure-food bill, or any other of like nature that may in the future be brought up, should receive the support of all bee-keepers. Let the Member of Congress from your district know that you are interested in this. Write him to this effect. A few words only are necessary; for instance, something like this:

Dear Sir:—I and others here are much interested in the pure-food bill, and we hope you will do what you can to have it passed.

Yours truly,

A postal card will do. The only address necessary is his name and the words "Member of Congress, Washington, D. C." Better than this, get up a petition—something similar to this will do:

Dear Sir:—Myself, and those who sign this, trust you will do what you can to have the pure-food bill become a law.

Yours truly,
C. D.

If it is written and signed with a lead-pencil it will answer, and three-fourths or more of the people in almost any community would be glad to get a chance to sign a petition of this nature, and that petitions or even individual expressions from their constituents have great influence with Members of Congress. There is no question that this is as it should be, for they are sent to Congress by the people to work and make such laws as will be of the most benefit to the people as a whole.

As an instance in support of this I might mention some facts in regard to the great injury that threatened the dairy interests through

oleomargarine. Indeed, through it much injury had already been done when dairymen arose, and, through letters and petitions to Congress, they succeeded in getting a law passed which did not prohibit the sale or manufacture of oleomargarine, but forced it to be labeled and sold for what it is, and this was sufficient; and the same would be true in regard to glucose if any food product that contained it had to be plainly labeled so that people would know what they are buying and eating; and although comb honey can not be adulterated, the adulteration of extracted does in an indirect way greatly injure and affect the sale and price of comb honey. One of the many ways in which it does this is because it lowers the price of extracted, and this causes a larger amount of comb honey to be produced than would otherwise be the case. This naturally has a tendency to lower the price of comb; and much of the adulterated stuff sold for honey is so vile that but a small proportion is sold to what there would be if it were pure. This causes what I think might be called under-consumption, and helps to lower the price of both kinds.

No bee-keeper should lack interest in this matter because he has a home market for his product; for in a short time bee-keepers in his locality may increase, and his home market become glutted to such an extent that he will be forced to depend on the general market for the sale of his crop. It takes but a short time to oversupply any rural home demand, when others near get started in the business. Besides, city prices as a rule have considerable influence with prices that can be obtained at or near home.

I have now very imperfectly expressed what I should like to say on this subject; but perhaps it will cause others more able to lay the matter before bee-keepers in such a way that it will receive some of the attention that its great importance warrants.

Southern Minn.

[It is impossible at this time to form any idea of the probable effect of Cuban honey on the American markets. If the present duty should be removed it is easy to see that it might be a serious competitor, because the Cuban bellflower honey would doubtless compete in flavor and color with any sweet clover, and might in some markets be taken in preference, especially if it were sold for less money, as it could be with the duty removed; but for the present, at least, I have no fear along that score. So far Uncle Sam has made no move to annex Cuba; and unless he does, there is no reason why the duty should not remain on Cuban honey; and even if annexation should take place it does not necessarily follow that Cuban honey will come here free.

But glucose—yes, that is the real competitor we now have. It is a competitor because it enters so largely into many of the so-called strained-honey samples purporting to be pure stuff. Sometimes I feel almost discouraged while in the markets in the different cities, when I call for strained or extracted honey. If I call for extracted, the clerks hardly know

what I mean; but if I ask for strained—oh, yes! they have "plenty of it." In nearly all the large stores I have been in, where such goods have been on sale, I seldom find pure honey put up; and it does not take a chemist, either, to decide that the goods are adulterated—almost pure glucose. Let those of our friends who fear we are making too much noise on the subject of adulteration go into some of the large grocery and department stores in the various cities. Let them ask for "strained honey," and then see what they get. If they do not find exactly what I have found, glucosed honey, in five cases out of ten, then I shall be surprised. This stuff is usually put up in bottles and tumblers, and can be retailed in single packages at a good deal less than the average bee-keeper can afford to wholesale pure goods in large lots. As friend Davenport says, it is these goods that are the real competitor of pure extracted honey. In the first place, they cut down the price of pure honey; and in the second place they disgust consumers with *all* honey put up in liquid form, whether adulterated or pure. It is like burning a candle at both ends; and unless we can do something about it pretty soon, the average bee-keeper, I am afraid, will find there is little profit in producing extracted honey. As it is, no one complains that his profits are *too* large.

Glucose is cheap because it is used so extensively in the liquor business. Glucose and poor beer go naturally together, and the twain are the enemies of the honey business.—ED.]

TWO-STORY EIGHT-FRAME LANGSTROTH VS. TEN-FRAME QUINBY.

Arguments in Favor of the Former.

BY DR. C. C. MILLER.

I have always felt just a little anxiety as to whether giving room with Langstroth frames in two stories would answer precisely the same purpose as the same amount of room in one story with larger frames. Mr. Dadant's silence on that point has been somewhat marked, and I've been watching for a long time for some expression from him upon the subject! On page 871 he puts himself squarely on record as preferring the one-story with the large frames.

I have some fear that he is right, mixed with a strong desire to believe him wrong. That desire comes from the fact that it is so much more convenient and easy to have the smaller 8-frame hive when it comes to handling, especially for one who takes his bees back and forth to an out-apiary or puts them in cellar. So, by way of whistling to keep up my courage, I'll attempt some reply.

The footnote has replied to the argument that dummies belong only to the large hives. In hives with frames at fixed distances, such as all my newer hives are, the dummy is not only a convenience but a necessity.

As shown by the editor's footnote, the two-story can be limited to exactly the same capacity as the one-story with larger frames. But I'm

not sure the editor has any great strength of argument when he says, "When you add *one frame at a time* to your big colonies, do you not thereby make a great amount of labor?" For with the big hive Mr. Dadant *can*, if he so chooses, give all the room at once, just as it can be given with the small hive. That is, he can give the full quota of frames at the start, thus making really *less* work than if he had to add a second story.

I think that, when a second story is given below, the bees can and do increase the size of their brood-nest just as gradually as if large frames were added at the side one by one, with the exception that they hesitate a little to make the first start across a bottom-bar, a top-bar, and space between. Remember that the bees don't make their first start in the lower story by filling one comb from top to bottom; but as soon as a little start is made at the upper part of one frame a start is made at the tops of its neighbors at either side, the bees preserving the spherical form of the brood-nest until the lower story is pretty well occupied.

In the saving of heat at a time when it is very important to save it, it seems to me the two stories of smaller hives have the advantage. Granted that you can add one frame at a time with the larger hive, closing up each time with the dummy, the same thing is done automatically with the two-story, requiring no labor on your part. When a second story is given below, no extra task is thrown upon the bees to keep warm any space they do not occupy. Isn't the upper story just as warm standing on an empty lower story as standing on a bottom-board? Isn't it a little warmer? for when standing on the bottom-board the wind has a more direct chance at the bees. As they move gradually downward they warm up the space just as fast as they need it, and no faster.

"But if you are aiming to raise comb honey," says Mr. Dadant, "as the queen goes downward, as a matter of course the bees will fill the space above them with honey as the brood hatches, and the result will be from twenty to an indefinite number of pounds placed in these combs before the sections are touched." That's a strong point in favor of the single-story, *if it's correct*. I'll try to show twice that it isn't correct. When the time comes to put on supers (and that's just a little *before* any surplus is stored) I take away the lower story, leaving eight frames of brood, but no "twenty to an indefinite number of pounds placed in these combs before the sections are touched." It's possible I might do better to leave more room, but I'm not sure of it, and I haven't made a big success of leaving two stories through the harvest. I think it's clear that Mr. Dadant's statement is not correct as applied to my practice. That's once.

Now as to the practice of those who allow the two stories to remain. I've had queens that would keep 14 Langstroth frames filled with brood. Friend Dadant, don't you see that, for such queens, your 10-frame Quinbys are too small? Why not come over on my

side and advocate larger hives? But I'll not insist on that, for such queens are probably exceptional. Of course, the lower story can be closed down to any size desired; but even if the whole sixteen frames are used I think it may be shown that Mr. Dadant has overestimated the case a little. There is some confusion in the matter of comparing frames. The editor counts 10 Quinby frames as equivalent in comb surface to 12 Langstroths. In Dadant's Langstroth 9 Quinby frames are counted equal to 12 Langstroths, which is nearer the mark. Thick top-bars have made a little difference in the capacity of the Langstroth. I have just measured one of my frames, and it has a comb surface of $144\frac{1}{2}$ inches. The Quinby has a comb surface of 189 inches. That makes 10 Quinby frames contain a little more than 13 Langstroth frames. If 10 Quinby frames are right, then 16 Langstroth are less than 3 frames out of the way. I think that, instead of that being too much by "twenty to an indefinite number of pounds," it would be only from an indefinite number of pounds up to twenty.

Mr. Dadant says he has a larger super surface. True, and that's a good thing. But it makes the supers heavier to handle, and that's a bad thing. And when it comes to counting up the number of unfinished sections at the close of the season, the advantage is on the side of the smaller super.

As I said in the beginning, I'm afraid the larger frames in the single story are a little better than the smaller frames in two stories; but if I can possibly help it I'm not going to believe they're enough better to balance the great advantage of having the lighter hives to handle.

Marengo, Ill., Dec. 8, 1898.

[I agree with the doctor, because all our hives are eight-frame, and because that is the way I *want* to believe. But, joking aside, the eight frames are much handier than the one big hive.—ED.]

RAMBLE 161.

Bicycling in the Mountains.

BY RAMBLER.

From any point of view in Northern California it is found to be a strictly mountainous country. Scott Valley is merely a small space upon the margins of Scott River where the land is fertile and could be tilled, while surrounding this valley on all sides there is nothing but mountains.

Whoever has passed over the northern route of travel will remember how the line of railroad is hedged in by mountains, and how few the tillable places are; so from Scott Valley west to the ocean, a distance of sixty miles, it is mountain peak and canyon, a wild and silent country.

The Klamath River drains all of this country, and its course through the mountains is marked by gorges of sublime magnitude. About thirty miles west from Scott Valley we

find Marble Mountain, a region but little known, and accessible only on pack animals, but in point of grandeur the scenery approaches that of the Yosemite.

Owing to these mountain barriers there is no way of getting to the coast except over these pack-trails; but directly west from Scott Valley and Siskiyou Co. we find in the extreme and obscure northwest corner of the State the county of Del Norte. The only con-

would be well for some of those who are becoming disgusted with the dry seasons of Southern California to make a further investigation.

While sojourning in Scott Valley I made a radical change in my method of locomotion. Whenever I have heretofore been siezed with a bicycle fever it has usually ended in the purchase of a horse and cart; but here the purchase of such an outfit meant the sale of it again in a few weeks; therefore, owing to all of the circumstances, my wheel-fever took such an acute form this time that one evening the mail coach from Fort Jones dropped off a brand-new Cleveland wheel to my address. We became quite well acquainted in a short time; in fact, we became boon companions; and the turns we had whirling along the tortuous roads, through the pine forests, stirring up the crisp pine needles, and breathing to the full the balsamic fragrance, are times and seasons not to be forgotten.

We have roads in Siskiyou County that will give the rider in any conveyance all the variety desired, and my

first essays on the wheel were full of thrilling experiences. Just imagine the "thrilling experience" of pushing the wheel ahead of one's self up a steep mountain side, and then just imagine sailing down the other side with a large pine bough attached to the wheel frame with a strong cord, and dragging in an unwilling manner in the rear. This was my only brake, and it worked well, and made the very welkin hide itself in the dust. But ex-

venient route whereby to get into this county is by water from San Francisco to Crescent City, the county-seat. I understand, however, that around said city, and in the nearby towns, is a good location for bees. Alfalfa is grown there, and my informant spoke in glowing terms of the abundance and good quality of honey-dew. This gentleman was not then a bee-keeper, but was engaged in the cattle business; and from his point of view Del Norte would be just the place for profitable bee-keeping. His reasoning was from a cattle-dealer's point of view, and as follows: The owners of cattle in these mountains during the long winter have to pay \$6.00 per ton for alfalfa hay. The same cattle could be wintered in the Sacramento Valley for \$3.00 per ton for the feed. The natural supposition of the uninitiated would be that, from an economical point of view, the cattle should be wintered there. The cattle-dealer acknowledges that there would be a saving if the cattle were moved south; but there is another and more profitable end to the proposition. "Here in the mountains," said the cattle man, "we are just half way between San Francisco and Portland, and we command both markets. If the price of beef rules low in San Francisco we ship to Portland, and vice versa."

He thought the same rule would work well in producing a large amount of honey in Crescent City, and shipping the product by water, as the case might be, to northern or southern markets. There would certainly be a great saving in freight rates, for shipping by water is always economical. There is much wisdom in this reasoning; and perhaps it



perience is a great teacher, and I now have a better brake method. I place the toe of my shoe on the forward wheel just back of the fork, and it gives such control that I can approach the steepest grade without fear.

I have before remarked that this is a great game country. The mountain fastnesses are

favorable to the occupation by wild animals, and the hunting population is sparse. In the autumn, bears intent upon securing their daily rations of acorns sometimes stray down to the farming district. One morning the butcher boy, in his rounds between Oro Fino and Etna, ran across one of these derelict bears in an intervening piece of woods. The boy put whip to his horse, and sped on to Etna. The report that a bear was near town set the hunters in motion, and only a few hours elapsed when poor bruin was shot and brought to town.

In my explorations of these wild canyons through which I could ride a wheel tolerably well I expected at almost every turn in the road to see among the big trees a specimen of big game. It might happen, you know, just as it did with the butcher boy.

Having no gun with me at such times, I might be in quite a predicament. Still, my curiosity to see the country led me into all manner of wild places. Aside from rabbits and other small game, a stray coyote would occasionally halt in surprise as I whirled around a bend in the road, stick up his ears, and then scurry away through the forest.

Kitter Creek flows from one of these wild canyons, and in one of its clearings is where the late Mr. Levering had one of his apiaries destroyed by bears.

It is not remarkable that, while exploring such places, and thinking of possible adventure, the senses of the novice should become very acute, and the least unusual noise quicken the pace and give more of a tension to the nerves. And so it happened one day while in Kitter Creek Canyon that I became quite excited as I saw a violent agitation of the bushes to the right, and ahead of me, and presently I caught a glimpse of a bulky cinnamon-colored body. Now, there are cinnamon bears in these mountains, and they are exceedingly fierce; and the immediate inference was that this was one of the varmints. I could hardly stop my wheel without coming in deadly contact, therefore I could do nothing but scorch ahead; but it was not much of a scorch, for the road was sandy. As the animal plunged through the brush I imagined growls, and my hair began to elevate. Oh for a gun! oh for a stray hunter with his trusty rifle! But no friendly aid appeared. All my past life flashed suddenly before me, and my conscience was dreadfully pricked by the sarcastic remarks in which I had indulged about old maids and grass widows, and especially what I had told Mr. Mallow, the Fort Jones bee-keeper, only a day or two before. He inquired of me if that young man Wilder who traveled with me a few years ago was not dead.

"Dead, Mr. Mallow?" replied I; "why, he is worse than dead—he is married."

In this supreme moment I was so sorry I said it; for if Mr. Wilder was worse than dead with just a wife, what must be the condition of Mr. Mallow with wife and eight children? About the time that sorry feeling had taken possession of me the animal plunged across my track. It was all done in a second of time. My wheel went from under me, and I was tumbled in the dust, and at the mercy of the

beast. I tremblingly bounced to my feet; but what a relief! Then I picked up my wheel; then I laughed. My bear, when it came into the open, proved to be nothing but a contemptible cinnamon-colored calf. It had escaped from some alfalfa-patch with a long picket-rope attached to its neck; and my wheel, in passing over the rope, and the rope running rapidly under it, nicely tripped the rider. My exertions in the dust caused the calf to continue its headlong career, which I hope is still continued; but I really believe a wheelman was never tripped in like manner before.

But all things have their times and seasons, and the pleasant days I had enjoyed in Scott Valley drew near their ending; and as I contemplated on my journey south I regretted that I had lived so many months near the Oregon line, and had not put a foot on its soil.

"Why," said I to Mr. Levering, one evening, as an inspiration struck me, "what is to hinder me from going north through Oregon to Portland, and from there to San Francisco by steamer?"

"Nothing," said Mr. Levering. "It is only 250 miles. Take your wheel and that calf along, and you will astonish the natives with your fleetness."

Mr. Levering threw in that calf matter as a joke; and as we talked and joked over the matter the idea grew upon me to such an extent that I not only resolved to put a foot in Oregon, but both feet into Washington, and to return south from Seattle.

In accordance with the above plans I left Scott Valley on the 26th of October. My baggage went out in a freighter's wagon while I wheeled out. The last I saw of Mr. Levering he was leaning pensively on his cane while the morning breeze was toying as usual with his whiskers. I crossed the mountain safely, and stopped that night in Yreka.



E. L., Pa.—It would be simply impossible to cross bumble-bees with Italians, because they are functionally different; and, for another reason, they are an entirely distinct species.

F. A. K., Wis.—If your bees have the dysentery in your bee-cellar I hardly know what you can do. If they once get this disease indoors they are pretty sure to die in large numbers before spring. The trouble is, doubtless, due to inferior stores. If you could take away the stores they have, and give them bee-candy, it might help matters. If you had combs of sealed sugar stores this would be altogether better; or if you do not happen to have this, mix powdered sugar and honey into a stiff dough and set on top of the frames; but before doing this I would recommend that you take away the present stores and give them empty combs.



GOOD MANAGEMENT OR MANY COLONIES—
WHICH?

Question.—I commenced in the bee business two years ago, starting with four colonies, and I now have sixteen. I had intended to increase up to about fifty colonies, and work these carefully and as thoroughly as I was capable of doing, thinking that fifty well worked would be better than more not so well cared for; but in talking with a man a few days ago he advised me to increase to 100 or 150, he claiming that such a number would secure for me better results, with less labor, than would the fifty worked as I proposed. He said the extra labor I would expend on the bees, working as I proposed, would more than buy the extra hives needed, while I would secure more honey in the end by keeping the larger number of colonies. What do you think in that matter? I wish to do that which will secure to me the best results for my labor.

Answer.—There is an idea prevailing with some bee-keepers that more money is to be made in keeping bees by keeping a large number of colonies and letting them largely take care of themselves than there is by keeping a less number of colonies and properly caring for them. Not long ago I received a letter bearing on this subject, which will be right to the point here, the same being from an apiarist of considerable experience, who said that he was going to keep more bees than he had formerly done, and do less work with them, for he believed that double the number of colonies would give him fully as much honey as he had been getting (if not more), even if he did not manipulate them at all. He said that he believed the system of management used by many in securing large yields from individual colonies caused a greater amount of labor and manipulation than there was any use of, and henceforth he would adopt exactly the reverse of the plans he had formerly used, and put more bees into his field, so that he might secure the same amount of surplus as before, with very little labor. All that would be required would be the investing of a little more capital in the shape of hives, etc., and that the "good management" plan would soon be something known only in the past history of bee-keeping. I have not tried to give his words exactly, but I have given the substance of the letter. As this came from a person in whom I had much confidence, and as I was using the management plan, and was and have been recommending the same to be the right way in which to secure the best results, it was but becoming in me to consider the matter a little; and if I was on the wrong track it would be better to become right, and that speedily, especially as my writings might influence others in the wrong direction. After carefully considering the matter it did seem to me that there was one very important item re-

garding these extra colonies which the advocates of it entirely overlooked, which is great enough to more than pay for the manipulation, so that the investing of capital in more hives for the extra number to be kept is worse than thrown away. The item I allude to is that each of the extra colonies put in the field in order to secure the honey secretion from a given area with but little or no manipulation costs from 60 to 75 lbs. of honey each year to support. Some apiarists who have studied closely claim that no good colony can exist a year without consuming fully 100 lbs. of honey; but that it may not appear that there is a desire on my part to overdraw the matter we will place the amount needed to carry any good colony through a year at 60 pounds. The question then comes to us, "Which is cheaper—a little extra manipulation, or the extra colonies, hives, etc., and the honey which they consume?" Suppose that 100 colonies produce an average yield of 50 pounds each, and by so doing secure all the nectar in a field year by year. This would make 5000 pounds of surplus as our share of the field, while each of the 100 colonies will require 60 pounds, or 6000 pounds as a whole, as their share to carry them through the year. Thus we fail to secure to ourselves one-half of the honey from our field by employing an extra number of colonies. On the other hand, if we employ the management (or economy) plan, which our English friends do, that of making, by thorough fertilization and careful tillage, one acre of ground produce from 50 to 60 bushels of wheat to where we Americans produce only from 20 to 30 bushels, we shall find our statement thus: Eleven thousand pounds is the product of our field; 50 colonies are all that are needed, with good management, to secure it. Then 50 colonies must use 3000 pounds of this for their support, leaving 8000 pounds for the manager. Thus it will be seen that the manager can appropriate to himself 3000 lbs. of honey for his manipulation, and use little if any more time than he would use on the 100 without manipulation; hence from the standpoint of overstocking a field the management plan is 3000 pounds ahead of the plan of keeping an extra number of colonies. At the present low prices of honey, this, at 10 cents per pound, would amount to \$300 as the price of the extra manipulation, should it be proven that such was required, besides the saving of the capital, and interest on the same, which would be invested in the extra hives. I am firm in the opinion that there are many men in this country who do not receive a greater amount than that for a whole year's manipulation (work) in the coal mines and other places. And this same thing holds good, be the number of colonies kept great or small. A man can care for half the number of colonies on the management plan as easily as he can for double the number as proposed by my correspondent, and suggested by the adviser of the questioner, and this half will give the apiarist as good results in dollars and cents as will the whole when cared for in a slipshod way, and save the extra honey consumed by the extra half of the number of bees, as clear

gain to the bee-keeper. Thirty years of bee-keeping life tells me that this is not mere fancy, but facts which the success of the two plans proves, as will also be obvious to all who have closely watched the reports in our various bee-papers during the past. If any reader, or the questioner, has any doubts along this line let him try the two plans side by side till he is convinced. With the low prices of honey seems to have come the idea of going back to the old idea that "bees work for nothing and board themselves," and so many bee-keepers seem to think that all that should be required of them may be summed up in the old saying of "hold the dish to catch the porridge." To the truly enthusiastic bee-keeper there is no fun in such a plan as this. Pleasure comes only through a love of our pursuit; and if we love it we are always interested enough to make the labor *fun* while we are doing it. Did any one ever have any fun going fishing and get it by swinging in a hammock in the shade? Did any one ever enjoy himself in the fox-chase while sitting beside the sitting-room fire? The love of fishing and of the fox-chase is greater than that for hammock and fire, and so the love for *work with the bees* must be greater than the love for ease if we would succeed in our pursuit.



MOTH-WORMS IN FENCE HONEY; A POSSIBLE OBJECTION.

Mr. E. R. Root:—I have watched the discussion of the fence question with keen interest, and I am thinking of making a trial of it. Nearly all my honey in the past has been raised without separators of any kind.

Will you please give me your opinion of the following? Will there not be great danger of the tiny wax-moth working on the cappings of fenced honey when it is crated up for shipment? The combs coming as they do so near together are, in my opinion, much more liable to this damage, for I have noticed in crating no-separator honey that, where two combs would touch, or nearly so, that would be exactly where these little moths, too small to be seen by the naked eye, would do their worst work. Have not other California apiarists brought up this question with you before?

I have much wished that I could try the fences in connection with ordinary 7-to-foot bee-entrance sections. Is this wholly out of the question? I do not like the idea of having a crate of honey, when opened, showing nothing but the wood parts of the sections. I like to have the honey smiling up from between the sections as it shows in the ordinary open-top section. Don't you?

Will you kindly send me a quarter of one of your fences? I wish only the end posts and the posts next to it, with the slats. This will give me the measurements and the idea of

it, to see how I can work them into my supers. Also please send me a quarter of a no-beeway section. These will be easily mailed, and will do me as well as a whole section and fence.

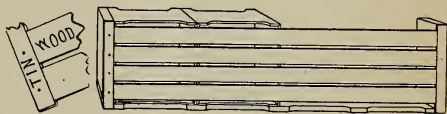
I will give you an inflexible rule to help you out in deciding what length the articles should be in GLEANINGS. When you have a very long article on an interesting subject, right to the point, put it in; when you have a real short one that is just as good, put that in; and when you have a medium-length article that is just as readable, give that the same chance you did the others.

G. K. HUBBARD.

Riverside, Cal., Jan. 24.

[There may be something in the fact of having two adjoining faces of honey so much less than a bee-space apart; but after all, we hear but little about moth-worms nowadays since the advent of Italian bees and their crosses. I should, therefore, anticipate but very little trouble from that source. So far fence honey has been gobbled up too soon in many markets to be damaged much by moth-worms.

It is entirely feasible to use a slat separator with the old-style beeway section. Indeed, we list in our catalog this year that sort of separator. The accompanying illustration shows how it may be used. It is constructed the same as any fence, with the exception that there are no cleats or projections on the bars; and the ends are bound together with a strip of folded tin. These slat separators, as we shall call them, may be used in any super using old-style separators and beeway sections.



Mr. J. E. Crane used a good many such separators last season, and is of the opinion that the freer communication made better-filled boxes; but at the same time he prefers the plain sections and fence.

As to the length of communications, and which ones shall find a place, this is often a hard matter to decide. What may be interesting to the editor may not be so to the reader. After all, it is the readers' preferences that we have in mind. I desire, therefore, as far as possible, to keep in touch with our readers and hope they will be free to criticise the contents of GLEANINGS, as by that means I can make a more interesting and readable journal.—ED.]

HOW TO SECURE THE GREATEST INCREASE FROM A SINGLE COLONY.

On page 164, April, 1881, of GLEANINGS, is this statement: "A friend in Michigan, with hives and empty combs, once built a single colony up so as to make 30 of it in a single season."

Will you kindly tell us how to proceed to accomplish such results, or even half so many? What would be the relative value of old combs and full frames of wired foundation in build-

ing up nuclei? Would not feeding be necessary from start to finish? B. F. JONES.

Idaho Falls, Ida., Jan. 24.

[Given a good strong colony, a supply of ten or twenty hives complete, nailed up and painted, each hive filled with frames of foundation, full sheets (not half sheets), one can, with care and a knowledge of the business, secure a large increase in a single season—possibly thirty from one. If I could have frames filled with empty combs, or combs with a little honey in, I should prefer them to mere sheets of foundation. My method of procedure to get the largest increase would be this:

As soon as there comes settled warm weather I would divide my colony up into four two-frame nuclei. To each I would introduce an untested Italian queen at the time of making the division; contract the entrances down to each hive, so that one or two bees could pass at a time. I would then feed a little every day. If I could just as well I would use cushions on top of the frames, and on each side, putting the nucleus in the center of the hive, as it is very important to keep the little cluster of bees warm.

When the queen fills the frame or frames with eggs, and there are bees enough to cover, I would put in another frame on the *outside*. As the weather warms up it might be advisable to put in still another frame, putting this one in the *center* of the cluster, in the mean time keeping up gentle feeding daily. A very good feeder for this purpose is the Boardman. This can be slipped into the entrance, and by screwing the can tightly or loosely into the cap the flow of feed can be regulated for the daily needs.

I would make the syrup by mixing together sugar and water in equal proportions by measure. Stir thoroughly, and then pour into feeder-cans.

As soon as the nuclei have two or three frames of sealed brood, larvæ, and eggs, take out one or more frames from each, and form another. This plan can be continued till one has 15 and possibly 20 little colonies; and if one has experience he *might* continue the division till he has 25 or 30; but he should stop dividing within at least 60 days before the setting-in of cold frosty nights.

If one can not afford to buy queens he will have to raise them and then the increase will be cut down more than a half, probably.

While an expert may possibly in one season be able to produce 30 colonies from one, the average beginner, probably, would not be able to produce more than 8 or 10. In 1892 I myself, without any special effort, reared all the queens, and increased an apiary from 10 colonies, some of which were almost nuclei, to some 85 good colonies that went into winter quarters. They had no empty combs, but they were given full sheets of foundation. They were not fed, but were made to depend entirely on natural sources for their supply. Had I fed after the honey season, and given empty combs, I might have made double the increase. But let me tell you, it is one thing to get an increase of 30 from one colony, and

it is another thing to get a proportionate increase from 10 colonies. To get so large an increase as 30 from one stock, one must have a long season, supply laying queens as fast as needed, feed a little every day, allow no robbing to get started, and, above all, queens must be good. It may be there is a bee-keeper living that is smart enough to make an increase of 30 colonies from one in one season by raising his own queens. If there is one who has accomplished the feat, let him hold up his hand and tell how he did.

There is much being said about expansion nowadays; perhaps it might be well to devote a little space to the subject of expansion of one colony.—ED.]

THE PETTIT IDEA; IMPORTANCE OF A BEE-SPACE OUTSIDE OF THE OUTSIDE ROW OF SECTIONS.

I had intended to write you for GLEANINGS in regard to sections and prices, but the ground has already been covered. I will merely say that my experience in securing 2000 lbs. of comb honey from 30 colonies this season convinces me that I want a bee-space on the outside of the outside row of sections, with passages through the separator.

O. E. NICHOLS.

Cincinnati, N. Y., Jan. 30.

A CORRECTION; MOUNTAIN GROUSE.

I am reported as having an apiary in the Yellowstone Valley, near Billings, and that I had taken 200 lbs. of honey from one hive. The truth is, I have never handled bees; but I shall be a bee-keeper some day. I think the Yellowstone Valley a good place for an apiary. I am glad you enjoyed your trip through the park, and hope you will come again. Those "pretty chickens" you ran across on your trip were mountain grouse—too bad you did not have a gun.

CARL VOLLMER.

Effingham, Ill., Jan. 1.

[Thank you, friend V., for setting me right. My informant said he felt pretty sure you were the man. Since we are mistaken, can't some other Montana bee-keeper tell us who it was, or give us a report from the Montana alfalfa regions?—A. I. R.]

THE DARKY BOY IN THE APIARY.

Say, Ernest, my eleven-year-old girl is interested in the discussion of white or black clothing angering bees, and wants to know how the darky boy would figure in the apiary.

Alsea, Oregon, Dec. 30. F. A. BATES.

[That's a question I can't answer; but the average colored boy will hold his own in any apiary.—ED.]

SWEET CLOVER FOR ALKALI SOILS.

We have nothing so valuable here as sweet clover to enrich alkali lands. Wherever it has grown for two or more years it has left a rich spot. I will sow it on all my alkali land this spring that I can get water on, as it needs irrigation here the same as alfalfa.

Gazelle, Cal., Jan. 30.

A. A. BROWN.

THE HONEY-LEAFLET A SUCCESS IN SELLING HONEY.

We note that you want to hear from others in regard to the success of the honey-leaflet. So far as we can judge we believe it has helped the local sale of honey on the western slope. We have only a few left out of 5000, and several merchants have asked for more to distribute to their trade since first having them. We have had many farmers and bee-men speak well of the leaflet, and say it was a good thing.

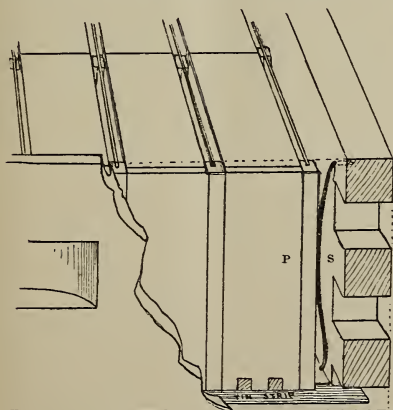
THE ABBEY HARDY CO.

Grand Junction, Colo., Jan. 9.



OUR 1899 SUPERS; SPRINGS VS. THUMBSCREWS AND WEDGES.

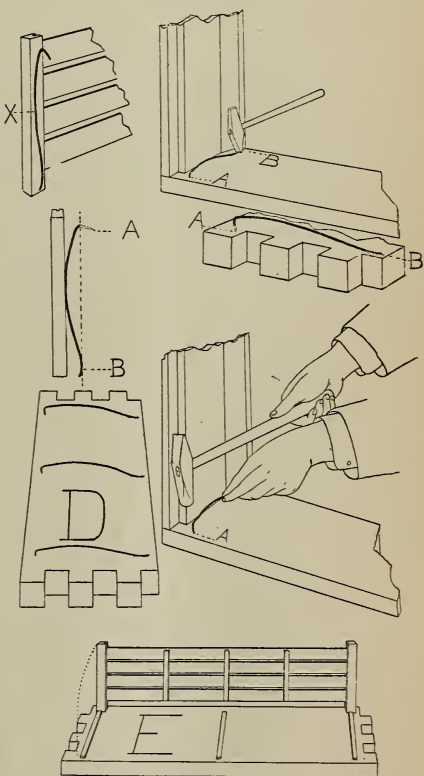
It seems to be generally admitted that a means for producing compression on sections when in the super is desirable, and some go so far as to say it is a necessity. If sections and separators are placed in supers loosely, it leaves little interstices or spaces that the bees fill up with propolis. Various devices have been used to bring about the desired pressure. Some prefer and use thumbscrews; others, wedges; and still others, tightening-strips. Thumbscrews stick out in the way, and sometimes in damp weather become stuck fast in the holes. Wedges are very often propolized fast, making it difficult to remove them. The same objection applies to tightening-strips, although to a less extent. We now use two or three springs in our 1899 supers, one at each end, and bearing against the fences, and one in the center. See S in the cut below.



These springs produce a gentle even pressure against the contents of the super; and, no matter how much the weather changes, causing the stuff to shrink or swell, those springs will adapt themselves to the condition, producing always a gentle yet firm pressure. After the sections are filled they can be easily

taken out, owing to the fact that there is a yielding pressure; and propolis—well, it has no show.

The manner of applying the spring compression to the supers is shown in the accompanying illustrations. X is a curved piece of steel wire, one end of which is bent at a right angle, and sharpened. This is driven into the wood at a point that will come opposite the end cleat of the fence when in the super. After this is driven in, the other end is pounded down into the wood, making a sort of groove for the end B to slide in. Three such springs are used in our regular super—two to come directly opposite the end-cleats of the fence, and one opposite the center cleat as at D, showing super side detached. On the opposite super side, and spaced in the same manner, are nailed three thin cleats, supplied with each package. These are to keep the outside fence a bee-space from the super side, about the same distance away as the springs



do on the opposite side. We put in enough fences so that we have a fence between each outside row and super side. It costs a little more, it is true; but it carries out in effect the Pettit idea, or what he calls his divider—a method by which it is said the outside faces of the outside rows of sections are as well filled out as the faces in the center rows. Reports from bee-keepers last season go to show here is a good deal in this little scheme, and if so it may be worth dollars.



THE boss printer says we have enough matter, editorial and otherwise, to fill another complete journal, notwithstanding this number is eight pages larger than our regular issue. This will explain why some communications sent some little time ago have not yet appeared.

We have been having some cold snaps in Northern Ohio. The mercury has ranged all the way from 15 to 20 below zero, and some reported that it went even below 20. While it perhaps may have been as cold as this before we never knew it to keep there so long. I just received a letter from Dr. Miller, stating that he was in the house with his coat off, notwithstanding it was 24 below zero outside. But he dryly adds, "We have a fire in the house."

FRED S. THORINGTON.

We have just learned through R. B. Leahy, of the Leahy Mfg. Co., of the death of Fred S. Thorington, of Chillicothe, Mo. Mr. Thorington has been quite a prominent writer, particularly for the *Progressive Bee-keeper*. Mr. Leahy writes:

He had been an invalid for more than 20 years, and with a wheel chair he wheeled himself through his apiary of 40 colonies (sometimes) of bees, and cared for them. His neighbors say for him that in all these days of pain and inconvenience he always remained cheerful, and was a lover of flowers, birds, and bees.

Most of us, under such circumstances, would hardly have thought we could keep bees, to say nothing about taking care of them. And this reminds me of the case of Mrs. L. C. Axtell, one who has been an invalid all her life, and yet one who has done a large part of the work in managing one or more large apiaries. Some of the time she has been obliged to lie on her back while doing her work. Such people have real pluck and heroism.

APIS DORSATA FOR THE UNITED STATES.

AN American soldier now in the Philippines at Manila has kindly volunteered to secure *Apis dorsata*, of which he says there are a great many in and about Manila, and further that the natives have offered to furnish him the bees. He has asked for instructions how to ship, etc. We have given him the necessary information, and have offered to pay him \$25.00 for one queen, \$35.00 for two, and so on. We will publish his interesting letter in our next issue.

I for one feel sanguine that we shall be able to obtain the big bees, because Mr. Uglow says Manila is only 20 days from San Francisco. Of course, he will have to arrange to get direct steamer connection so the bees will not be caged any longer than is absolutely necessary. If any of our subscribers desire to communicate with Mr. Uglow, his address is, John C. Uglow, Co. M, 2d Reg. Ore. Vol.

THE VALUE OF THE BICYCLE FOR OUT-APIARY WORK.

IN the *American Bee-keeper* for February there is a very interesting and valuable article from one of "Cogshall's lightning operators," Mr. Harry S. Howe, to whom I have before referred. His experience in regard to the value of the wheel for all kinds of out-apiary work is very nearly my own. In fact, I am almost inclined to put all he says in italics.

The average bee-keeper under 45 who is used to handling horses, and says he must have them anyhow, and therefore thinks he would have no use for a bicycle, is making a big mistake. Let him keep his horses if he wishes; but he will find that the bicycle will be used much even then.

As our readers know, every summer I manage one out-apiary myself, and do nearly all the going and coming on a bicycle, even to carrying foundation, supers, and what not. There are lots of things a fellow can do *if he only thinks so*; and I have no doubt that Harry could even carry bread and milk if he wanted to.

As I have often said, one can hire a team for one out-apiary or two, and possibly three or four. All hive stuff should be delivered early in the season, and then during the greater part of the rest of the year one can come and go on his bicycle, even carrying some material when occasion may require. After the crop is secured, then of course he will be obliged to hire a team or teams to carry it to town. As a general thing a farmer will do the work for a little honey.

Keeping a horse is expensive business, as I know from sad experience; and then a horse around bees—well, nature never designed that they should be together in company. I had one valuable animal killed, as some of our readers know, at one of our out-yards. I have had runaways in going to yards; broken thills; broken buggies; broken harness. I have been through the experience of having a horse have the mud fever; I have been kicked almost into insensibility. Oh, dear! it would have been money in my pocket if I had never invested in horse flesh.

The horseless carriage will soon be here, and then we can bid good-by to the horse so far as the bee-business is concerned.

There, now, I did not intend to write all this prelude to Harry's excellent article. Here it is—or, rather, an extract from it:

By using a wheel a man can do much more work in the out-apiaries than with a team.

Mr. Cogshall's yards average nearly 10 miles from home, and my lot average 14, which gives lots of chance to save time on the road. With a wheel a man can start as soon as he is ready. When he gets to the bees he can go right to work. The time saved on the road and in getting started comes just when it is worth the most.

My regular riding gait is 12 miles per hour, or twice as fast as a good team can go over the same roads. Of course, once in a while a wheel will get stuck in the mud, but not often. It did not happen to me once last year, and only twice this season, and one of those times I should have gotten home if I had been alone.

There is a great difference in wheels in that respect. When I built my present wheel I had that point in mind; and by using small tires, with plenty of room between the tires and the frame, I can go right along unless the mud is very deep. The time saved by the

use of a wheel, where one rides as much as I do, would pay for one in a single season.

One of the worst drawbacks to the use of the wheel is the impossibility of carrying bread and milk for dinner. In the case of several of the yards there is no place to get a meal, so we have to carry what we have. At some of them we have a regular boarding-place, where we can get a dinner or stay over night.

Even on the farm the wheel comes in handy. One day recently, one of the horses was suddenly taken sick. Brown got on his wheel and hustled for a veterinarian. When the doctor got there he said he was only just in time to save the horse's life. If we had taken the time to hitch up another horse, that, together with the time Brown made by "scorching," would have made it too late.

Sometimes people ask me how I manage to run my out aparies without a horse, but it is easy. My teaming costs me about the same as my bicycle-tires, and can be paid for in honey at that.

Speaking about bicycles, my advice is to get a good one. Do not pay much less than \$40.00—better pay \$50.00. There are some good wheels at \$35.00; but before you purchase one, let me know the name, for perhaps I can tell you whether it is a good one or not.

Now, perhaps you would like to know what wheel I would recommend. Nearly all* the Rootville folks and many of our employees are riding Clevelands. We have found them to be so immeasurably superior to the common run of bicycles that we would hardly take any other as a gift. They run smoothly and easily, and do not require repairs.

This is not a "paid puff," for I am only telling you what is my actual experience and sincere belief in regard to bicycles. There are others, probably, just as good; but I *know* these are excellent. If you want a Cleveland, just write to the H. A. Lozier Co., Cleveland, O.

I omitted to state that the Cleveland bicycles have gear cases. I would no more think of riding a bicycle in the future, without having the chain covered, than I would think of going without a hat. My Cleveland, with its gear-case, has not had a cent's worth of repairs, and the chain has not even been touched in over a year's riding. It runs so still that one would hardly suspect there is a chain inside of the case. I have run that wheel through mud and water, dust and sand, over snow and ice, I was going to say, nearly every day in the year; and, with the exception of the tires, it is practically as good as when it came out of the shop.

THE PURE-FOOD CONGRESS.

On page 269, April 1, 1898, I spoke of the last meeting of the Pure-food Congress that assembled in Washington on March 2d; and I further referred to the fact that our representatives E. T. Abbott and Manager Secor, sent by the U. S. B. K. U., had received prominent recognition on the floor; that one of the members was made chairman of the Committee on Organization, and another, vice-president for Iowa. Another meeting of the same organization has been held, also in Washington, on the 19th and 20th of January. I take pleasure in copying from Mr. Abbott's paper, *The Modern Farmer and Busy Bee*, the following paragraph:

*A. I. R. at present is riding a chainless Columbia, also a good wheel.

President Blackburn showed himself to be an excellent presiding officer, and, owing to his promptness and decision, a great deal of routine business was transacted, notwithstanding there were a great many addresses on the program. It was voted to make the organization permanent; a constitution and by-laws were adopted, and officers elected, to serve until their successors are chosen. The old officers were all re-elected, it being the opinion of the committee on organization, of which the writer was chairman, that those who had begun the good work would better be left in full charge for the present.

It will no doubt be of special interest to the bee-keeping friends to know that our industry received its full recognition on the floor of the congress the same as last year. The editor of *The Modern Farmer and Busy Bee*, who went as a representative of the United States Bee-keepers' Association, and the Missouri State Board of Agriculture, was made chairman of two important committees, and was again named as vice-president for the State of Missouri. Mr. Secor was continued vice-president for the State of Iowa; E. S. Lovesey, for Utah; and, at the suggestion of the writer, Thomas G. Newman was named for vice-president for California. It will be seen from this that the bee-keepers will have themselves to blame if they do not have a hand in this important legislation. I desire to say in this connection that the bee-keepers of the United States are under special obligations to the Burlington, Big Four, and the Chesapeake & Ohio Railways, for it was through the courtesy of these roads that the delegate of the United States Bee-keepers' Association was able to attend the Congress, there being only the small appropriation of \$15.00 set apart for this purpose by the directors of the Association, and this amount would not pay hotel bills and sleeping-car fare, to say nothing about the other necessary incidental expenses.

Mr. Abbott says the attendance was good, and the delegates in general believed that the pure-food bill, as revised by Congress last year, should be urged without any material changes. Some favored the changing of the wording in a few minor respects, while some delegates tried to so amend it as to kill it, but the latter were promptly "sat down on." The proposed law does not favor classes. It simply aims to make producers sell all articles of food for *just what they are*, but does not propose to prohibit entirely any of them, but to let each stand on its own merits; but those merits must be plainly set forth on all objects offered for sale. Mark Twain says he found this state of things prevailing in Paris, and he says it seemed strange to him to see such a "superfluity of honesty" as was displayed in that city on all the jewelry offered for sale. No one could get cheated.

The following is an abstract of the address of President Blackburn:

The question of what we shall eat has been a neglected subject ever since Eve ate the apple in the Garden of Eden. What a myriad of evils would have been avoided had not the first of all pure-food laws been violated!

The measure we are here to consider is not offered as a cure-all in any sense. No one, not even its most ardent friends, considers it a panacea for all the ills that afflict our food supply. Neither do we think that the twin sister of fraud—the harlot adulteration—will be an impossible creature when this bill becomes a law. Since the great lawgiver of Mount Sinai issued that immortal edict, "Thou shalt not steal," men have stolen, and will steal, until the end of time.

While this bill does not do all we could wish, does not meet all the objections that have been or will be raised against it, it will and does do much that needs to be done, and will be certain to render adulteration hazardous, less profitable, and exposure quick and certain. I think the least observing and the most skeptical will agree that it is high time that the many State measures to protect the public health and secure purity in our food should have their principal features crystallized into a national statute, that all States may engraft their legislative twigs on the national vine, and thus develop the fruits of legislation on harmonious, progressive, and uniform lines.

No national law on this subject will ever fully meet the views or satisfy the desires of all the many States and Territories of this great country.

I do not believe it possible that such law can do so. The critics will say the law is imperfect and we answer: "We are aware of that." They tell us the law has its defects, and we reply: "Show us a law that has not."

The measure as it stands now is a long, sturdy step in the right direction; a strong prop upon which to hang our hopes; a substantial foundation upon which to erect a magnificent structure. It will effectually stop many evils with which we contend; right many wrongs, thus bringing justice where justice is a stranger, and protecting those needing protection, yet utterly unable to protect themselves. It will render adulteration difficult, detection sure—a more effective remedy than any which has been proposed, considered, or enacted.

It represents the concrete experience of many years, and the best thoughts of studious minds.

It embodies the compromise views of those who have long considered the important and far reaching questions with which it deals. I do not hesitate to say it is a compromise measure; all such laws are, and always must be compromises. It must be expanded and contracted to meet the composite mental structure which gives it being and stands sponsor for its necessity.

It is important that it should be made a law during the present Congress. I therefore urge you to be on your guard against proposed amendments. Scan well their origin, and consider long their purport. Be not moved by shallow sentiment, nor turned by loose light logic. I adjure you, my friends, to stand as one man for the main features of this measure.

There is good reason for the adoption of this measure. No city or hamlet is free from adulteration, and one of the peculiarities of the business is that, the further away from home an adulteration gets, the more respectable it appears. There is need for this bill from one end of the country to the other.

PROSPECTS GLOOMY; DRY WINDS IN CALIFORNIA, AND NO RAIN; AN UNPRECEDENTEDLY LOW TEMPERATURE OVER THE CENTRAL AND EASTERN STATES; FEARFUL WINTER LOSSES EXPECTED.

I HAVE just received word from J. H. Martin (Ranbler), stating that the Californians are getting to be anxious again for rain, as it is nearly a month since their last downpour, and the time is getting short for rain to do them any good for the coming year. I have written to Mr. Martin to let us know by wire in case the long-expected rain does come. You may wonder why I am so anxious to get that information. For the reason that it will make a great difference with buyers in the East and with those on the Pacific coast whether the honey crop in California is assured or not; and the sooner we can get the information the better.

Since writing the foregoing we have heard from Mr. M. H. Mendleson, one of the big bee-kings of California, who writes under date of Feb. 6:

We are now having a fearful drying wind, and it has been blowing very badly for the past week or ten days, making the present prospects poor again for another year. The surface of the soil is getting dry and hard. I give up the season, although late rains may save us.

He further adds that some of the prominent bee-keepers are preparing trips northward to look for locations where their bees can fill up for another winter.

This is a gloomy outlook indeed for California—a failure of honey last year, and a probable one this year. But while they on the western slope are drying up, we of the central

and eastern portion of the country are freezing up (i. e., our bees). There has been an unprecedentedly low temperature of a large portion of our country. Even in that mild and balmy State of Oregon a subscriber, on Feb. 7th, writes that it has been 18 to 24 below zero. In Northern Michigan it has been 50 below, and in States where it rarely has been below 20 above it has been down to zero, and staying there.

All this means fearful losses in bees if there is not a change soon for the better. Early in the year prospects (by the way the orders were rolling in) seemed to indicate that this season would be as heavy as last in spite of last year's general failure of honey. But if half the bees die off there will be a lot of discouraged bee-keepers and supply dealers. No one can determine just yet what the outcome will be.

But it's an ill wind that blows no one any good. The heavy winter losses, if they do occur, will not be with the provident and bee-journal readers. They will winter their bees and they will get the crop this summer if there is any honey, and they will have all the markets to themselves. It is the careless and go-it-as-easy-as-you-can bee-keepers that will have a tale of woe to tell. It is they who will get no honey, even if there is a good season.

Later:—After the foregoing was in type the following came to hand:

I report at this date over half of my bees dead. The hives are full of honey. The inside is daubed up badly, and full of frost. It looks as if there would be a shortage of bees next spring. W. D. SOPER.
Jackson, Mich., Feb. 11.

When a man like W. D. Soper has lost half his bees, then the case is much worse than I thought it would be; for if the up-to-date bee-keeper is going to lose so heavily, how many bees will the go-as-you-please take-it easy bee-man have next spring? If they do not have an almost total loss they will have hardly any thing but nuclei. It begins to look now as if there would be a great demand for bees by the pound and nuclei next spring. Here is a chance for somebody to make some money.

Still later:—To-day, Feb. 15, it is warming up, the mercury standing at the freezing-point (32). This will, perhaps, give the bees an opportunity to change their clustering-nest; and if it does it will save possibly thousands of colonies.

DELIVERING HONEY TO MARKET ON A BICYCLE.

AFTER my editorial on the subject of wheels for out-apiaries had gone to press I received the following from a bee-keeper who not only uses his bicycle for apiary work, but actually carried over 3000 lbs. of honey to market on it. Here is what he says:

You speak of the wheel as being very useful in the apiary. This is my second season in the bee business, and I have delivered 3200 lbs. of honey on my wheel. I take as much as 40 pounds at a time in 5 and 10 pound pails, as I retail it all. I am very much in love with GLEANINGS, and always await its coming.

St. Thomas, Ont.

W. J. ROBB.

We are just making preparations to put in a 350-horse-power boiler. Our present boilers are inadequate for the work we have to do.



Whatsoever ye shall ask the Father in my name, he will give it you.—JOHN 16: 23.

For some time back, dear friends, I have had a good deal to say in regard to the matter of answers to prayer. Several times I have thought that perhaps I was holding on too long to this subject; and yet in my desire to benefit mankind, and to help those who are in trouble, I have been again and again almost impelled to tell you how I had been helped and guided, and lifted through my troubles and discouragements. God forbid that I should at any time or under any circumstances convey the idea to any one that God was more willing to hear and answer *my* prayers than those of the rest of humanity.

A good many times I have worked long and anxiously to accomplish a certain thing, and have failed. Then I hear or read of somebody who has succeeded with the same thing, and I am filled with a great desire to see the man, and to see his garden or farm, with a feeling that, if I knew just *how* he did it, I could do the same thing, or something nearly the same; and I have traveled many miles, as you know, to meet these successful people and to learn their ways; and I have tried through this journal to explain to you how it is they *have* succeeded when so many of us have failed. A good many times it is a simple matter when you come to see the actual thing with your own eyes. When I was full of enthusiasm over the Grand Rapids lettuce I succeeded in getting a glimpse of a greenhouse containing a full crop. This glimpse was only by the light of a lantern, and I was in the greenhouse only a few minutes; but that one glimpse was worth to me many dollars. I really felt glad when he agreed to let me have half a pound of the seed for \$50, because I knew then I could grow such lettuce, or felt very sure I could, with the seed and the glimpse he had given me. Others succeeded in like manner, and now growing this lettuce is a great industry, and it is cataloged by almost every seedsman in the world. It comes somewhat natural for me to describe how things are done, in a way that will make others understand it so they can duplicate my success.

Now, in this matter of answers to prayer I have felt sure that thousands of people might triumph over their difficulties if I could make it plain to them how God answers prayer, and not only go through life rejoicing, but, more than that, go through *death* (with its pain and suffering), rejoicing in the hope of a risen Savior and Redeemer.

While these thoughts were in mind it was my privilege yesterday to listen to a sermon by Rev. S. D. Gordon, of the Cleveland Y. M. C. A. His subject was, "Hindrances to answers to prayer." You may be sure I was attention all at once. He first read promises from the Bible—a great number of them—

including one similar to the one I have chosen for my text above. How should it come that with these great, precious, and wonderful promises, repeated again and *again*, so few professing Christians and church-members should avail themselves of that wonderful privilege of going straight to the Creator of all things with their troubles and perplexities?

Mr. Gordon said he would consider four reasons why our prayers are not answered. The first and most important hindrance is *sin*. This is a very little word, and many times people think it is a little matter—*little* sins. He said we were having a good deal to do just now with electricity. One who is in touch with the great Father above is like the man who goes to the switch-board. He moves a little key only a few inches, and perhaps a whole quarter of a city is all at once flooded with light as a consequence. He turns another switch, and lights another quarter, and so on. By means of this switch-board he moves a single lever, and electric cars are sent miles here and there; or a great factory is started running with all its wheels and powerful machinery. Now, these things are possible while the connections are perfect. If a wire gets down, the current is "grounded," and nothing can be done until this broken circuit is repaired. People talk about *little* sins. Suppose a man were working a telegraph instrument, and there is a break in the wire. The ends are separated, say, half an inch. Suppose he should express astonishment that so little a break as half an inch should prevent his sending a message. Dear friends, just one little sin entirely spoils the connection, and our prayers never reach the throne of grace. One might pray till doomsday, just as the telegraph operator might keep drumming on his key till doomsday. There can be no message or response until the mischief is repaired. Is not that Bible? David says, "If I regard iniquity in my heart, the Lord will not hear me." Once more. I am sure you are all familiar with the passage where the Savior says, "If thou bring thy gift to the altar, and there rememberest that thy brother hath aught against thee, leave there thy gift before the altar, and go thy way. First be reconciled to thy brother, and then come and offer thy gift." One can not expect God to hear and answer his prayers while any little thing remains unadjusted. I once had an actual experience right along in this very line. I went to prayer-meeting and sat down; but I could not keep my mind on the subject of the meeting because I was thinking of a difficulty the foreman in our lumberyard had had with a man about some basswood lumber. I arose at once and left the meeting, planning to go in search of my irate brother. I met him very unexpectedly within a few rods of the church. I put out my hand to him smilingly, but he was not going to take it. He had just been consulting a lawyer. I told him we two would consult the same lawyer, and I would abide by his own lawyer's decision. I still think the lawyer was a little biased in giving his opinion; but I paid the difference, and got back to prayer-meeting before it was out.

Jesus has much to say about *forgiveness*. Suppose we call this the second obstacle. He not only says, "Love ye your enemies, and do good to them that hate you," but he bids us over and over to forgive as we hope to be forgiven. He tells us we must forgive and *forget* if we expect to be forgiven. That wonderful passage in the Lord's prayer ought to be sufficient; but for fear it may not be, the Savior seems to have expressed that same thought over and over again. A great many times we must suffer loss in this world. In the effort to lift humanity above human weakness, his admonition sometimes seems to be almost extravagant. For instance, he says, "*Blessed are ye when men shall persecute you and revile you, and say all manner of evil against you falsely for my sake.*"

In this day of temperance crusades against the saloon-keepers, many ministers of the gospel have been severely persecuted and misrepresented, and falsely accused. I wonder if they all remember the wonderful promises to those who have been thus wronged. In the sixth chapter of Luke we are bidden to *rejoice and leap* for joy when we are persecuted just because we are taking a bold and decided stand against sin.

The question may come up right here, "Mr. Root, do you mean to claim that God hears *your* prayers because your life is free from sin?" Those who know me best are aware that my life is not free from sin or sinful thoughts; but I hope it is free from deliberate, willful sin. My heart is selfish, and the selfishness sticks out and hurts people, and does harm, I fear, wherever I go; and I am so selfish I am afraid I do not see it or notice it till somebody calls my attention to it. Mrs. Root may say, "Dear husband, you walked through the house with your rubbers on, and probably just after you had been in the muddy greenhouse; and there are your foot-tracks across my clean kitchen floor, just after it had been so nicely scrubbed." Then she takes the mop and pail, and cleans up the footprints, when I am sure she is *already* tired and weary. Perhaps I was in quite a hurry, and forgot to remove my rubbers, and I commence what is intended for an apology: "I did not mean to make any trouble, but I was in a brown study about something more important than muddy (or clean) floors."

There, do you see any selfishness sticking out when I try to tell the story? and is not selfishness *sin*? Most surely it was a sinful act of mine to be so much taken up with my own affairs that I forgot the dear wife, and did not think a word about her anxiety to have her home neat, healthy, and tidy-looking. Giving way to this kind of selfishness may ruin the happiness of some fellow-being, or result in loss of life. And I am just now reminded that Bro. Gordon said the third hindrance to answers to prayer is selfishness. Oh, dear me! When I come to think how many of my prayers have been selfish ones I am literally astonished and *amazed* to think that God could constantly hear and answer a single one. It is true, I had *some* good and generous thoughts in mind when I prayed

over my troubles. When we got into that difficulty with the electrical machinery, I had in mind setting many needy people at work; and when I prayed to be delivered from the pain of toothache and earache, I asked for a kind of deliverance that I could consistently recommend and teach to all mankind; and I hope that through all my toil and all my prayers I have been keeping constantly in mind my *neighbors*, community in general, and all who read these Home Papers.

Many wives and husbands pray for unconverted companions. The Christian mother prays for her husband, perhaps day after day, and may be year after year. Why does she wish *her* husband more than other men to become a Christian? Naturally, because he *is* her husband, and it is right and proper that she should long for his conversion. If she wants him converted because it would be nice to have him go to church and sit by her side, because it would be nice to introduce him to her Christian friends, have him ask a blessing at the table, and all these things, her prayer may be a very selfish one after all; and if while she prays she indulges in various human weaknesses, and lets him see that she is petulant, ill-tempered, and the like, it is certainly not strange as the years pass that her prayer is not answered.

And just here, dear friends, is the great thought of this talk of mine to-day. I am anxious that each and all who come to me will have faith in my words, and may lead lives of prayer, because a life of prayer means and includes so much. All sorts of plans and devices have been invented to make people honest. The beauty of truth, unselfishness, etc., has been talked about and written about. Young people have been told, oh how many times! that honesty is the best policy, and yet they are not honest. We, each and all, have *agreed* that honesty is best; but we are not honest. We assent, but we do not act. We take the best side of the bargain. May be we do not all the time, but every little while that demon of Self gets in, and we take the better side, and let some patient, good-natured poorer brother in this world's goods take what is left. Education does not help the matter. Belonging to the church helps it some, but I have sometimes thought not *very* much. But how is it about beginning a *life* of prayer? Was anybody ever so stupid as to think that he could humbug God when he goes off by himself and kneels in his closet? Why, the veriest idiot that was ever born would not be so silly as to take words on his lips when none but his Maker could hear, that were *not* honest and true. The man who prays—that is, he who has felt the need of God—and goes into his closet alone to pray, is honest then if he ever is in his life; and if he expects God to hear and answer a great part of his daily supplications it will be because he has made those words in the 139th Psalm, 23d and 24th vers's, his own: "Search me, O God, and know my heart; try me, and know my thoughts, and see if there be any wicked way in me, and lead me in the way everlasting."

A life of constant and honest prayer will

not make us all at once unselfish, I am aware; but if we commence correcting and straightening up every little transaction as we look back over it, and see that it is not exactly fair, we shall soon get to living an honest life, and God rewards *all* such efforts. Suppose, dear friends, you are anxious about some young man—may be your own boy. He is away from home, and exposed to temptation. Wicked people are planning for his downfall, no doubt. Suppose you should find out that *he* is commencing a life of prayer—that he is working hard to establish a perfect, unbroken connection with the dear Savior. Suppose you learn that he is in constant communication with the great God above; that he has access to a “switch-board” connected with a direct line to the throne of God, and that he can at any minute telegraph the little prayer, “Lord, help!” and that he has learned to know and believe that help comes instantly—help sufficient so that he may withstand all the fiery darts of the evil one. How much would it be worth to know, dear parent, that your boy had established such a close relation with his Maker—a relation that is to go with him through life? Now, please remember I do not mean to tell you such a person will be lifted out of all troubles. The wise teacher does not do the work for the pupil. When I was quite a child we had a schoolmaster who always did the “sums” for the boys when they brought up the slate and pencil and said they could not get the answer. This master could cipher very fast, and many of the boys looked on with bright eyes while he made nice figures and did the work in good style. But a new teacher came. There was considerable grumbling among the boys because he did not do the work for them. I heard of it, and thought I would not go to the master. I was away ahead of the class with my Ray’s Arithmetic, Part 3; but after working two days on an example I told the teacher I did not believe it was profitable for me to waste more time on it. I shall always remember how he spoke. “My young friend, I could work that out for you very quickly, and in one sense save your time and mine; but I think you can do it all right yourself if I simply ask you a few questions.” He asked me just *one* question, and that one question revealed to me the fact that I had been stupidly away off the track, and I assured him that I should like to go to work and do it myself without any further help. He kept his eye on me, and when I had my answer all straight and clean in less than five minutes a sort of telegraphic communication passed between us just by our eyes, and he and I were warm friends ever afterward. His plan of teaching was more by quiet questioning than by doing any work at all himself. God, in his loving kindness, answers our prayers in much the same way.

Now, the dear brother who gave us that talk about hindrances to answers to prayer somewhat surprised and startled me in considering that fourth and last hindrance. He said something like this: “Dear people, I do not understand it, I confess; but I believe it is nevertheless true that Satan himself is per-

mitted—at least to a certain extent—to hinder and delay answers to prayer. We pray for a loved one. The prayer would have been answered, perhaps a start was made in answering that prayer; but Satan interposed. Evil associates, perhaps, persuaded the young man not to go to prayer-meeting; and God *permitted* Satan to go on with this work.” While my friend was speaking it occurred to me that one of the great hindrances in the way of having our prayers answered in doing away with saloons is that Satan *constantly* interposes his influence and work everywhere. He tampers with the officers of the law; he influences the judges; he gets control of the police and the police courts. Shall we give up to Satan? God forbid! Satan can go so far, but not beyond that limit. And *we* can hinder *Satan*. Our prayers hinder him, and are a restraint on him. We may never in this world be able to understand just why Satan is permitted to meddle with human affairs, and to hinder and delay the answers to the prayers of honest Christians; but God knows. We are weak, but he is mighty. “Shall not the Judge of all the earth do right?”

Many of our prayers, while not absolutely selfish or harmful, are of no particular importance. James says, “Ye ask, and receive not, because ye ask amiss,” and we may call this still another hindrance. A little girl prayed every night for several days that she might be permitted some time in life to see Queen Victoria. Very likely she prayed with childish faith. Now, this is a sample of prayer where no particular good can come of it. The little girl was young, and Queen Victoria was very old; and it seems quite likely that such a prayer will not be answered. And more important than all is it that no particular good could come if it *were* answered. I do not suppose the little girl had even thought about any good coming from it. Jesus said, “If ye abide in me, and my words abide in you, ye shall ask what ye will, and it shall be done unto you.” If the same spirit that actuated the Savior while he was here on earth actuates and helps us, we shall be constantly seeking and praying for something for the good of all humanity. We shall be hungering and thirsting after righteousness, and that the gospel of Christ Jesus may be brought to all the world; and while we are in this attitude of heart, while it is the inspiring theme of our being, our petitions will be something for the good of humanity in general—not for self and for self alone, and not for idle curiosity or for some notion or fancy of the moment; and this hungering and thirsting after righteousness will not at all unfit us for building great cities and connecting them with great railways. It will not at all unfit us for extending electric wires and telephone wires to the home of the humblest person, for the constant thought will be of God the Father, and of his love to us his children; and thanksgiving and praise shall be to him for evermore. Before we can claim these promises we must be in *harmony* with God and his plans, and then shall come to pass that precious promise, “*Before they call I will answer.*”



**A POTATO THAT WILL NEVER SCAB; THAT
\$1000 OFFER FOR A BARREL OF POTATOES.**

I have been holding my breath somewhat since that offer went out (see page 64, Jan. 15), for fear I should have to pay the money; but I began to breathe a little easier when nobody seemed inclined to take it up. The following is the nearest to it of any thing we have had; in fact, it is the only communication I have had on the subject:

I will send you by mail one potato. I don't know what the name is. I bought them of a man by the name of Newel, so I call them "Newel." If you know the right name, let me know. If you want more of them I will send them. I have had them for five years. They have never shown any sign of scab since I have had them, and all other varieties have scabbed. I got five varieties of you three years ago, and I have discarded all of them. The Newel has gone through wet and dry, hot and cold, bugs and every thing else, and has come out on top every time.

Tekamah, Neb., Feb. 2.

J. S. ROBINSON.

Well, the above is pretty good. If these potatoes have been grown for five years, and have never shown any sign of scab, it certainly looks promising. Now, when our great seed and plant men get something of that sort, they usually buy up the whole stock so as to monopolize the market; but I do not believe I want to do that way. We want these new potatoes to have a thorough test in widely different localities; and I would suggest that friend Newel offer them for sale at such a price as he thinks will be fair; and if it really turns out to be a nice potato, a good yielder, one that never scabs, the \$1000 will be forthcoming, for it will be worth a million or more to the world, even if I do not get the profit of it. There may be some question as to who should have the \$1000. My intention was to give it to the man who originated and brought to notice the potato. And that reminds me that there is an advertisement, in this issue, of potato seed for the benefit of those who wish to introduce new varieties. One reason why I believe that a scab-proof potato can be produced is, there is a difference in the potatoes we have. Last fall we grew several bushels of Rural New-Yorkers that were not scabby a particle, while a strip of Carman No. 1, right alongside, were scabbed badly; and my impression is that the Rural New-Yorker is, as a rule, less liable to scab than almost any other potato. Perhaps I might add, for the benefit of those who wish to go into the business of growing new varieties of potatoes, that it is like growing new varieties of strawberries. If you should plant a whole acre of seedlings, and as closely as they could stand (several growers have done this very thing with strawberries) you might watch and care for the whole lot, and find, after you had got through, not one of them was in any way superior to the berries or potatoes we have already. A good many kinds are "trotted out" every season, with the claim that they are *away* ahead; but look at the kinds that have been

boomed and then dropped out of sight, say within the last 25 years, if you have been watching plant and seed catalogs than length of time. Will friend R. please tell us more about that scab-proof potato? Is it early or late? How does its yield compare with others? What is its quality for table use? I judge the potato to be an early one, as one sent me was already sprouted; and I wish to say that it is a very handsome potato.

Since the above was put in type we have received the following additional information from friend Robinson:

Mr. Root:—I have about 30 bushels of those potatoes. I could not take less than 75 cts. per bushel, for I believe fully half of the potatoes in this part of the country are frozen. It has been extremely cold here this winter—26 below zero yesterday morning by the government thermometer, and 30 by others.

As to the name, I could not find out. An old gentleman by the name of Newel, living in Iowa, was visiting a son living here on a farm, and the old man came over and brought a bushel of those potatoes; but his son had moved to town, and had no place to plant them. He told me about them, and what wonderful potatoes they were. He said he paid \$2.00 for the bushel. I paid him \$2.00 for about two-thirds of the bushel. The Newel family have all moved away, and I don't know where.

Tekamah, Neb., Feb. 10.

J. S. ROBINSON.

DISEASES OF THE TOMATO.

This is the title of a bulletin sent out by the Florida Experiment Station. It is written by Prof. P. H. Rolfs, whom it was my good fortune to get acquainted with while I was in Florida. This bulletin gives most thorough directions for treating all diseases of the tomato, besides discussing the matter of insect enemies. Prof. Rolfs recommends the Bordeaux mixture for the black rot, and says if it is made right, and applied with sufficient thoroughness, it will surely kill the fungus and allow the tomato to start out with a new and vigorous growth. If you want the bulletin, write to the director of the Experiment Station, Lake City, Fla. It is furnished free to all Florida people, and I presume it will be sent to anybody if a stamp is inclosed. This one little bulletin may be worth hundreds of dollars to anybody who makes tomato-growing a business.

THE BENSON RENOVATOR COW PEA.

On pages 668 and 705 for last year I made favorable mention of Benson's new cow pea. Since that time I have been watching the *Practical Farmer* very closely, especially Prof. Massey's answers to questions in regard to cow peas in general; and my impression is that there are early varieties of cow peas already well known in the South, that possess nearly all of the desirable qualities of the Benson pea. Of course, I am not the one to judge, as I am comparatively unacquainted with the many different varieties of cow peas grown in the South. Since friend Benson has used in his circular what I put in GLEANINGS, a good many inquiries have come in to me. Here is one of them:

I am very much interested in the renovator cow pea. You experimented with it last year. Can you not give to us fuller particulars in regard to your treatment of and success with the pea? Did you plow it under? If so, how did you manage? Did stock eat the pea hay well? When did you plant, and when did you harvest? Did the peas mature fully?

Battle Creek, Mich., Feb. 2. W. H. LITTLEJOHN.

I did not plow the vines under, any of them; in fact, we left them until they were killed by frost about the first of November, to allow as many of the peas as possible to ripen. I am inclined to think the strain is not yet perfected, for different plants blossomed at very different times. Some of them were covered with pods that were dry, while others were full of pods all green, and still others hardly yet in bloom. All the seed we saved was from the earlier ones. When frost caught them the whole plot was covered with a great mass of vines and foliage. I did not plow them under, as I got the impression they would be worth just as much to be plowed under in the spring. I tried to feed them out to our horses, but they did not seem to take to them. My impression is, it was because they had not learned how. I am sure cows will eat them, and I have no fear but that horses would also after they have acquired a taste for the pods filled with the mature peas. I did not record the date they were planted, but it was some time in June. With the chance they had, they made a most remarkable growth; but I have seen very much of this same rampant growth from the cow peas we obtained from the South, only these latter did not produce ripe seed in our locality.

SWEET CLOVER, AND WHAT IT IS GOOD FOR.

THE above is the title of a 12-page pamphlet that we are prepared to furnish free of charge to bee-keepers or anybody else interested in this kind of clover that grows *better* on ground so poor that nothing else will grow on it. The leaflet is made up of suggestions from bee-keepers and others who are well acquainted with the clover. It also discusses fairly, I think, the question as to whether sweet clover can be called a noxious plant under any circumstances.

THE KEELY MOTOR.

Just about the time GLEANINGS was started, the scientific world was full of excitement in regard to the new force discovered by Keely, that was to supersede steam, electricity, and every thing else heretofore known. Almost every periodical in the land boomed Keely as one of the greatest of modern inventors; but the *Scientific American* denounced him first, last, and always. They said he was a fraud and a humbug, and that he dared not make a public exhibition of his motor, in a way that honest discoverers do. He gave some exhibitions, it is true; but nobody was permitted to come on to the stage, nor would he come out in front before people. He stood by a little window keeping himself a good deal out of sight. The *Scientific American* declared the wonderful results he displayed were done by the power of compressed air; and when they suggested proving their position by exploring the premises he pretended to get into a towering rage. Notwithstanding, men of great wealth invested their money in Keely stock, and he became almost if not quite a millionaire before he ever gave the world any tangi-

ble result. For 25 years he duped innocent people who happened to have capital. One of his largest victims, and one of his best friends through all these years, was a lady. So well was his secret guarded that the papers declared it had died with him, and some even now pretend the world had suffered a great loss. You know GLEANINGS has had considerable to say about people who possess wonderful secrets that they will divulge only for a certain sum of money; and GLEANINGS still insists that no good thing ever came along in this line. Keely succeeded in humbugging people, and making at least a large part of the world believe he was an honest inventor, while he lived in all the affluence and comfort that money could procure during those 25 years.

While he was living nobody succeeded in gaining an entrance to his laboratory and workshop; but after his death, what then? I believe there was some little effort made to cover up his hypocrisy and rascality, even after he died; but a reporter from the *Scientific American* succeeded, with several scientific men, in having the whole premises opened up and explored; and in a recent issue there are half a dozen photographic views exposing the whole thing. In a concealed cellar under his laboratory was an immense steel sphere with strength almost if not quite able to resist the recent tests of cannon at Sandy Hook. From this tremendous reservoir of compressed air Keely had tubes leading to his humbugging machinery. With air under a pressure so that it was forced with a power almost equal to that of gunpowder, no wonder he astonished people, and then called it "etheric vapor," and made a pretense that this astonishing power was evoked from "vibrations," because he drew a fiddle-bow across the edge of a tumbler! In addition to the discoveries, a man has been brought forward who helped him make his humbug apparatus. Keely robbed rich people—people with immense capital, as a rule. The Electropoise humbug, which it has been our privilege to so thoroughly ventilate, was a little different, in that the owners robbed *sick* people, and are still taking the hard earnings of poor women who do washing for a living, providing they can find victims who do not happen to be posted. And by the way, dear friends, what do you think of a man who would live on other people's earnings, enjoying every thing that money can purchase, with such a prospect before him as Keely must have had just before he died? He evaded the truth a long while; but *death* brought his iniquity to light. What shall it profit a man if he shall gain the whole world and lose his own soul?

Many have been the days when I thought I'd write a few encouraging words as to how I appreciate GLEANINGS. Mr. Matthews took it quite a while before I took notice of it. One Sunday evening I happened to pick up a number. I can never tell how much I enjoyed reading your Home talks especially. While I am no flatterer, I believe in letting one know how much good he is doing in this life—not after he is gone from this world where they know nothing of it.

MRS. S. D. MATTHEWS.

Hamilton, N. C., Jan. 22.



DOCTORING WITHOUT MEDICINE.

Almost all my life I have been troubled more or less with sore feet. I presume one reason is, that during my childhood I had my feet frosted. Since then I have been troubled with chilblains in winter and corns in summer. About a year ago what seemed to be a corn or chilblain, or both together, became very troublesome. It started first near my little toe, and finally became so swollen that it not only made me lame, but it affected my whole right side, and made me about sick. I limped up to the doctor's office, and asked him if he would feel imposed upon if I wanted him to doctor my *feet*. He replied something like this:

"Not at all, Mr. Root. On the contrary, I am always glad to do any thing I can to relieve any kind of pain or suffering."

After he had taken a look at the inflamed spot near my toe he said he could fix me out all right, but it would take a little time. First, I was to get an old boot, or, better still, an old shoe, and cut a good-sized hole through, right over the inflamed spot. Then I was to give that part of my foot plenty of air. I ventured to object, on the ground that I could not go to meeting attired in that fashion.

"Oh! yes, you can go to meeting. Wear a black stocking—something just as near as possible the color of your boot or shoe, and few if any will notice it; and just as soon as your foot gets well enough you must give your feet more ventilation. Corns and chilblains are both Nature's cry for more air. Many people suffer greatly because they do not give their feet ventilation enough."

"Why, doctor, you don't mean to say that my feet want to breathe, do you? I think I have heard of people going barefoot in order to give their feet a chance to breathe, but I did not know that mine were of that kind."

"Well, I guess you have got it about right, Mr. Root. Our feet do need to breathe. Few people can stand it to wear rubber boots, because they are so completely impervious. I believe you have been wearing boots mostly in winter time. You want to get rid of your boots, and buy some shoes that lace very far down, say as near to the toes as possible; and leave the lacing loose enough so the air can get in. With this foot that is so inflamed and feverish you really must have that kind of shoe. Get a bicycle shoe that laces away down. If your feet get cold, wear coarse porous woolen stockings; then if your ankles are cold, have some woolen leggings; but let your feet *breathe*."

"Why, doctor, I am afraid I shall have to take back some of the spiteful things I have said about toothpick-toed shoes. From what you say, that gable-end air-space out in the point of the toe has a method in it, after all."

Well, I followed the doctor's advice, and, although almost two years have passed, I have not had any chilblains at all, and my corns

have not troubled me to speak of. I used to imagine that I must have boots in winter to keep my ankles warm; but now I really enjoy wearing my bicycle shoes all winter, protecting my ankles with extra woolen covering during severe weather. While visiting with my friend Vankirk, in Washington, Pa., we were talking over this matter, and he said he had read somewhere that Abraham Lincoln was in the habit of slipping off his shoes when he was writing at his desk, giving his feet a breathing-spell. Now, if I remember correctly the doctor did not give me any medicine at all; but I would ever so much rather pay a doctor for giving me sensible advice like the above, than for dosing me with drugs; and his little talk about ventilation for the feet did me so much good I am glad to suggest the matter to others who may be sufferers like myself. For a good many years I used to advise everybody indiscriminately to go barefooted in summer, as a rational cure for troublesome corns, and Mrs. Root used to remonstrate. She asked me if I wanted to see *her* going around barefoot. I told her I would rather see everybody going barefoot than to see them suffering as I suffered from troublesome corns. My favorite way of washing my feet in the summer time is to wade through the lawn when the grass is covered with a heavy dew. You see this gives ventilation, coolness, and a water bath (of *pure soft* water) besides. Now, the doctor suggested to me a way of ventilating the feet without going barefoot. By the way, I have almost all my life objected to shoes that lace up, because it wastes so much valuable time fastening with shoestrings; but I think now I would rather fuss with shoestrings than to have my temper spoiled by troublesome corns. Wouldn't you?

Years ago our good friend Orange Judd, of the *American Agriculturist*, recommended changing the shoes, and, if necessary, the stockings too, during the day, and taking another pair. He said it did the shoes good to give them a rest. My impression is it did good by giving the feet a breathing-spell rather than giving the shoes a resting-spell.

Our Roll of Honor.

When I made my offer of GLEANINGS a year free, and a little present besides, to those who had taken it 25 years or more, I made a rough guess that there might be 50 among our present subscribers who commenced with Vol. I. No. 1. But to be on the safe side I told the boys to print 200 cards to send with the little paper-weight. Well, the 200 cards are gone, and still the names come every little while. Why, it almost begins to look as though every one who subscribed during that first year is still a subscriber; and I confess the thought has been to me both encouraging and inspiring. May God bless you, each and all, for standing by your old friend A. I. Root during all these years.

I think I took GLEANINGS in 1879. Perhaps it is on your books; but I *do* know that I have paid mostly

from the bees for a nice farm of 70 acres, and a new \$1200 house and \$700 barn, windmill, and waterworks. I consider my success with bees due to GLEANINGS. One year when I had 20 colonies I cleared \$25.00 per hive, or \$500. I have kept bees since I was 17 years old, and taken GLEANINGS since I was 19.

Calamus, Iowa, Jan. 21.

D. WAGNER.

In looking over the time from 1873 to 1899, during which GLEANINGS has been a monthly (and later a semi-monthly) visitor, it brings back many happy and pleasant recollections and thoughts that I have enjoyed during all those years; and it also brings sad recollections of many who were its correspondents years ago, who have passed over to that great beyond; and soon, too, we the remaining ones of the 1873 subscribers will also be numbered with those who have preceded us.

H. H. BROWN.

Light Street, Pa., Jan. 25.

Dear Mr. Root:—As you make up a round-up of your old friends, I wish to be counted among them.

I do not agree with you on all subjects, but I do follow some of your advice. You told us once that, in case of disaster to the bees, we should retreat in good order, like a general losing a battle, and be ready in good order for the next season. But with me the last ten years have been mostly on the retreating order, and always retreating wears the best general out. I wish also to thank you again for favors received by me in our past dealings, as extending credit or doing better than advertised.

AUG. LEYVRAZ.

Francis, Fla., Jan. 26.

Wife says I began in 1874 with my bees in the chamber windows of my home in Toledo, Ohio. I had been a reader of GLEANINGS previous to that time, and possess almost all the back volumes up to the present. My first foundation-mill was made under my supervision. Electrotyping both sides of a sheet of Root's foundation, and sweating it on to a set of photographer's rolls, I used it for several years, and then purchased one of your \$100.00 12-inch machines. My first visit to Medina was for that purpose. I think it was the same year you erected your new building. Time has dealt kindly with me through life's pathway; but during my earlier years of bee keeping it was more or less rough and rugged. When we learn of the extreme suffering experienced by the poor in the North we wish all could enjoy the climate of Florida as has been our privilege for the past 15 years.

New Smyrna, Fla., Jan. 13. JOHN Y. DETWILER.

I am one of the number that have taken GLEANINGS since Vol. I No. 1, and have all the numbers now except a few of Vol. III., and occasionally one I have loaned to some one, that has not been returned. When my father was about my age he had one of the best taverns in Western New York, and kept several wagons running, buying hay, corn, oats, etc., to feed the immense droves of stock that, night after night, put up with him. Just like cutting a thread, his whole business was killed when the railroad was completed from Buffalo to New York. Just now my business (bee-keeping) is cut off just as completely by the timber men. My honey crop, that has been from 500 to 700 gallons per year, was 60 gallons in '98, and I am not certain but I may have to feed the equivalent of the most of that to bring them through the winter. Poplar has been almost our only source, and it is being cut out very rapidly, and there is nothing to take its place. It looks as if one bee-keeper must quit the ranks or move.

G. W. GATES.

Bartlett, Tenn., Jan. 2.

Our minds do seem to run nearly in the same channel in many things; and our ages are so nearly alike I thought I must write you. I do not know how long I have taken GLEANINGS. The oldest full volume that I find is 1876. I think I had parts of volumes before that. Since '76 I have taken it all along, besides others. I have a small load of bee literature. I have your photo with Blue Eyes on your lap; also house-apirary with, I suppose, Ernest and Maude on the stairs. I do hope Maude may get well again. Please tell her so for me. I have to wear a "harness" too.

I am 60 years old. My father died when I was 2½ years old, and left mother with three little boys. I reside in the old home. It is back among the country hills of the town of Union. I am the only one left of our family. We have two children, both married. Our boy lives with us. They have four, which makes eight in our family.

I keep bees and poultry. I have kept bees 30 years. I began with one box hive. I work them barehanded. Our location is poor. Were it not for buckwheat we

could not keep bees here. My present stock of bees consists of 140 hives, all kept at home. I winter indoors. If I were to start anew I might try chaff hives and outdoor wintering. I have never met with any serious losses in bees. You will probably smile when you read this part. I have some of the American hives gotten up by H. A. King, of Ohio. The bees in them seem to be as hardy as Concord grapes.

Hooper, N. Y., Dec. 31.

D. F. LASHIER.

I have been a subscriber from the first quarterly you issued, and have kept them all. I have also taken the *American Bee Journal* since 1867 regularly, and received a few copies before the war, during which time it was discontinued. Since my earliest recollection I have liked bees. Then my folks kept them; and how I was delighted when swarms came out! I would get in the midst of the swarm, and often bareheaded, in spite of orders to keep back; and how good the honey tasted in those days! My father, in the summer of 1856, gave me a swarm, and I assure you it was prized and looked after with interest. We then lived in York State. In the fall of 1857 we came west, and I sold my two swarms and father sold all of his. In the spring of 1860 I bought a swarm in a box hive in this place, and have not been out of bees since. Since 1866 I have kept my bees in movable comb hives. GLEANINGS has at all times been a welcome visitor, and I have much admired the energy of its founder, from the windmill days up to the present time. His enthusiasm from the time he wrote in the *A. B. J.* as Novice has been pleasing to me. When the bee-fever struck me I sought after and received all the books on bee culture that I could hear of, printed in this country, and also read all translated from foreign writers that I learned of. I have taken nearly all the bee-journals of this country till within a few years ago. I received five different ones for several years; all but two are now of the past. I have dealt with the Medina firm for many years, with satisfaction.

I wish GLEANING's, its founder, and all members of the firm, well. I feel quite well acquainted with the Root family, although I have not met any of them personally. I think much of all the departments in GLEANINGS. They are of much help to its readers.

Our honey crop has been all the way from nothing (one season) up to 13,000 lbs., an average of 153 lbs. per colony, about two-fifths comb honey—the best year we have had in all.

F. A. SNELL.

Dundee, Ill., Jan. 4.

I looked up a file of old bee-journals that had not been examined for 15 or 20 years. I found most of the early numbers of Novice's GLEANINGS IN BEE CULTURE, the oldest bearing date Feb. 1, 1873. I must have commenced taking it at the beginning, and I do not think I have ever missed a number up to the present time.

But this was not my first acquaintance with A. I. Root, or more properly, with his writings. In 1867 I commenced taking the *American Bee Journal*, published in Washington, D. C., and edited by Samuel Wagner. Mr. Root was then contributing a series of articles to that journal, one or more appearing in every number, at first over his own name, and afterward over the *nom de plume* of "Novice," which he kept up for several years. It was my interest in these articles, and my liking for the manner and spirit of the man, that induced me to lose no time in subscribing for his paper.

It would indeed be pleasant to have a meeting of some of these old subscribers to GLEANINGS and contributors to our bee-journals of some 25 years ago, say at Medina, some time next summer. Many of them have, no doubt, left this stage of action, and have gone to join the great silent majority. But those who may be left might get together then.

While hunting up the first volume of GLEANINGS I found a file of the *American Bee Journal* from 1867 to 1873, both inclusive, which brings up many reminiscences of the contributors and the subjects then discussed by them in it and in GLEANINGS about the same time. It does look, as you say, as if all the most important things in relation to bees and bee-keeping were pretty thoroughly gone over. There was a new era in bee-keeping—the invention of the movable-comb hive, the introduction of the Italian bee into this country, the discovery of the centrifugal honey-extractor, etc. Of course, these matters were largely discussed. But the natural history of the bee from a scientific standpoint, and the various subjects arising therefrom, were thoroughly studied and discussed, and some of them settled.

The hive question, with new inventions and many so-called improvements, was largely discussed; but it

seems that it is not settled yet. The writer took some little part in this discussion in 1870, and among his reviewers was C. P. Dadant, then quite a young man. And now, after an elapse of nearly 30 years, we find him hammering away in GLEANINGS for the past two months *along the same line*—not settled, but a great deal of the rubbish has been cleared away.

THADDEUS SMITH.

Pelee Island, Ont., Dec. 26, 1898.

I commenced bee-keeping April 10, 1877, with one stand, and have made bees pay. I have 130 stands at present, and have produced several tons of comb honey. I have taken GLEANINGS right along since 1878.

Oakley, Ill.,

FRANK BAKER.

I have taken GLEANINGS these many years. I don't remember whether I have taken it since the first number or not; but I remember well when it was printed by wind, since which time it has been printed by steam and edited by wind; but it has been a very genial and salubrious kind of wind, however—any thing but a dead calm for me.

JOEL HILTON.

Los Alamos, Cal., Jan. 16.

I took GLEANINGS before Blue Eves was born, for I remember reading about her. We do not want a year's subscription granted us; for if it had not been for GLEANINGS we should not be to-day where we are. I should like to have Mr. Root visit us and see our grand new greenhouse we have built. It is 110 feet long and 30 feet wide.

J. W. NICODEMUS.

Newcomerstown, O., Jan. 11.

I think I am among the first to take GLEANINGS. I can remember your rejoicing over the advent of Blue Eyes. I have been reading it very nearly ever since. It always has been a welcome visitor. I like your Home Papers, Notes of Travel, and J. H. Martin's Rambles. The *American Bee Journal* is one of my favorites with GLEANINGS; and may they prosper. I was born in Jefferson Co., O., Feb. 11, 1828.

Nevada, Iowa.

W. K. SMITH.

That souvenir carries me back in mind nearly a quarter of a century, when GLEANINGS was a 25-ct. publication, less than two years old, but to my mind it was very large for its age. It evidently possessed wonderful vitality and a large amount of brains, as is evidenced by its progress up to the present time. Although I am past eighty years old, my interest in GLEANINGS does not decrease.

T. H. PEAVEY.

Epworth, Ia.

A. I. Root.—I have not been a subscriber nearly as long as some of the veterans, but I subscribed soon after hearing of GLEANINGS and at one time it saved me ten dollars in preventing my buying a farm-right to make the Golden hive, which GLEANINGS showed up to be a humbug.

Also am well pleased with the stand you take in the Hall water-cure, Electropoise, and other like humbugs, and very much enjoy your Home Papers, Notes of Travel, Rambler's letters, Miller's Straws; in fact, all of it. I want Ernest and the boys to give the "old man" all the space he wants; and when he travels have him take more time.

J. J. MCGOWAN.

Swan Quarter, N. C., Feb. 5.

I first subscribed for GLEANINGS in 1879, having seen your advertisement in the *American Agriculturist* ("Friends, if you are in any way interested in bees or honey," etc.). I was 20 years old at that time, and have kept bees ever since; also had bees one year before that. Since my marriage, 12 years ago, I have made bee-keeping my main business, with varying but usually excellent success. My largest crop of honey was taken in 1889 from 73 colonies, spring count, and was 13,000 lbs. extracted honey. I have been greatly indebted to GLEANINGS for my success. Have purchased most of my supplies from you. I have always read and appreciated the Home Papers. On one occasion I read one for a sermon in our church when our pastor was away. For a good many years I saved and carefully put away all my GLEANINGS, but have given away a good many to neighbors; also sold some numbers to you in answer to your call for numbers.

G. H. POND.

Bloomington, Minn., Jan. 9.

I have had as many as 150 colonies of bees to care for, the greatest yield in one season being 7000 lbs. of honey. I bought sections of you when you ran by windmill power, and rejoiced with you when you put in your first engine. I have drifted west, and am building up a new apiary in Oregon. People here are getting interested in the bee business very much; al-

most every one has a few colonies in box hives; but a great many are transferring to movable-comb hives, and are becoming interested in progressive literature.

I join the Editor in wishing we could all be together and have a big talk, and I join him too in his opposition to vice and immorality.

JESSE W. THORNTON.

Oak Creek, Ore., Jan. 10.

It may interest Mr. A. I. Root to know that I have read GLEANINGS continuously since 1876, though I have not taken it myself all that time, and so am not entitled to any prizes. Two neighbor bee-keepers and myself for several years cast lots to decide which we would take, and took about all the bee-papers published in America, and exchanged for reading. But, what is of more account, I became interested in the gardening articles through the enthusiastic, entertaining happy way in which they are written, and it is very largely through their influence that I now have a fruit and vegetable farm of 40 acres, and a very congenial occupation and better health. Although the place is young yet, it already yields a good living for my family, and is yearly becoming more profitable. "Calamity howlers" get no sympathy with us.

Covert, Mich., Jan. 23.

H. D. BURRELL.

Mr. Root.—Reading the letters of the veterans makes my mind run back to about 1876, when by some means I got a copy of GLEANINGS. At the time I had twelve or fifteen colonies of bees, and that was about all I had of this world's goods. I remember how I read and re-read it. Then I sent for back numbers and subscribed for GLEANINGS. Then I did get interested in bees and GLEANINGS. I talked bees and GLEANINGS to my friends until I actually got people to subscribe for it, who were not interested in bees.

Say, friend Root, do you remember the first order I gave you for goods? I had to ask you for credit, as I was so desperately poor; but I told you I was honest, and would do as I agreed. To-day I own a farm of over two hundred acres, and do not owe a dollar on it, just outside of the town of Syracuse; and, by the way, it is one of the best farms in Northern Indiana. I do not say this boastfully. I have the bees to thank for it. For fifteen years I made bee-keeping a specialty—did nothing but attend to my bees. That is when I made the most money in my life. Several years I sold over one thousand dollars' worth of queens per year, besides bees and honey I sold. I remember how I longed and wished for the time when GLEANINGS would come; and when it did come, what a feast! and how I did enjoy reading it! Those were happy times. How I enjoyed the Home Papers! and how vividly I remember some of the first ones to this day, especially those written about yourself. You do not know how much good they have done me. My bee-keeping life—that is, when I made bee-keeping a specialty—has been the happiest part of my life. I still keep bees—about 100 colonies. By the way, I have some fine registered stock, both cattle and sheep; but I have nothing on the farm that pays as well for the money invested as my bees. I attribute my success in bees to always trying to apply the golden rule.

Syracuse, Ind., Jan. 4.

I. R. GOOD.

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